CALIFORNIA HIGH-SPEED TRAIN

Project Environmental Impact Report / Environmental Impact Statement

DRAFT

Transportation Technical Report

Merced to Fresno Section Project EIR/EIS

August 2011

CALIFORNIA
High-Speed Rail Authority

U.S. Department of Transportation
Federal Railroad Administration

CALIFORNIA HIGH-SPEED TRAIN PROJECT EIR/EIS

DRAFT
TECHNICAL REPORT

Merced to Fresno Section
Transportation Technical Report

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August 2011

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Acronyms and Abbreviations

AADT	Annual Average Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
ADT	Average Daily Traffic
a.m.	Ante Meridiem (before mid day)
AME	Atwater-Merced Expressway
AMP	Airport Master Plan
ATS	Atwater Taxi Service
AWSC	All-Way Stop-Controlled
Authority	California High-Speed Rail Authority
Ave	Avenue
BNSF	Burlington Northern Santa Fe
BLVD	Boulevard
CA	California
Caltrans	California Department of Transportation
CATX	Chowchilla Area Transit Express
CEQA	California Environmental Quality Act
CFR	*Code of Federal Regulations*
CMP	Congestion Management Program
COG	Council of Governments
Del	Delay
E	East
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
FAA	Federal Aviation Administration
FAT	Fresno Yosemite International Airport
FAX	Fresno Area Express
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
Fresno COG	Fresno Council of Governments

Fwy	Freeway
HCM	Highway Capacity Manual
HMF	Heavy Maintenance Facility
HOV	High-Occupancy Vehicle
hr	Hour
HST	High-Speed Train
Hwy	Highway
I	Interstate
ICU	Intersection Capacity Utilization
ITS	Intelligent Transportation System
JET	Jobs, Education, and Training
kph	Kilometers per hour
LOS	Level of Service
m	Meter
MAE	Madera Municipal Airport
MARTS	Merced Area Regional Transit System
MAX	Madera Area Express
MCAG	Merced Council of Governments
MCC	Madera County Connection
MCE	Merced Municipal/Macready Field Airport
MID	Merced Irrigation District Facility
mph	Miles Per Hour
MTS	Merced Transit System
N	North
NB	Northbound
NE	Northeast
NEPA	National Environmental Policy Act
NW	Northwest
OVFL	Overflow
pc/mi/ln	Passenger Cars per Mile per Lane

p.m.	Post Meridiem (after mid day)
Rd	Road
RR	Railroad
RTP	Regional Transportation Plan
S	South
SB	Southbound
SR	State Route
STAA	Surface Transportation Assistance Act
STIP	State Transportation Implementation Program
TCE	Temporary Construction Easement
TDM	Travel Demand Management
TWSC	Two-Way Stop-Controlled
U.S.	United States
U.S.C.	United States Code
UPRR	Union Pacific Railroad
V/C	Volume to Capacity Ratio
VMT	Vehicle Miles Travelled
W	West
WB	Westbound
YARTS	Yosemite Area Regional Transportation System

1.0 Introduction

The California High-Speed Train (HST) System, as shown in Figure 1-1, is planned to provide high-speed intercity service on more than 800 miles of tracks throughout California, connecting the major population centers of Sacramento, the San Francisco Bay Area, the Central Valley, Los Angeles, the Inland Empire, Orange County, and San Diego. The HST System is envisioned as a state-of-the-art, electrically powered, high-speed, steel-wheel-on-steel-rail technology, which will include contemporary safety, signaling, and automated train-control systems. The trains will be capable of operating at speeds of up to 220 miles per hour (mph) over a fully grade-separated, dedicated track alignment.

Two phases of the California HST System are planned. Phase 1 will connect San Francisco to Los Angeles via the Pacheco Pass and the Central Valley. An expected express trip time between San Francisco and Los Angeles is mandated to be 2 hours and 40 minutes or less. Phase 2 will connect the Central Valley to the state's capital, Sacramento, and will extend the system from Los Angeles to San Diego.

The California HST System will be planned, designed, constructed, and operated under the direction of the California High-Speed Rail Authority (Authority), a state governing board formed in 1996. The Authority's statutory mandate is to develop a high-speed rail system that is coordinated with the state's existing transportation network, which includes intercity rail and bus lines, regional commuter rail lines, urban rail and bus transit lines, highways, and airports.

Definition of HST System

The system that includes the HST tracks, structures, stations, traction powered substations, maintenance facilities, and train vehicles able to travel 220 mph.

The Merced to Fresno HST Section is a critical Phase 1 link connecting the Bay Area HST sections to the Fresno to Bakersfield, Bakersfield to Palmdale, and Palmdale to Los Angeles HST sections. The Merced to Fresno Section alternatives originated in two program Environmental Impact Report/Environmental Impact Statement (EIR/EIS) documents. The Authority and the Federal Railroad Administration (FRA) prepared the 2005 *Final Program EIR/EIS for the Proposed California High-Speed Train System EIR/EIS* (Statewide Program EIR/EIS) and the 2008 *Bay Area to Central Valley HST Final Program EIR/EIS* (Bay Area to Central Valley Program EIR/EIS) to evaluate the ability of an HST system to meet the existing and future capacity demands on California's intercity transportation system and to identify a preferred alignment for the San Francisco Bay Area (Bay Area) to Central Valley sections of the HST System, respectively.

This technical report describes the affected environment associated with transportation modes within the study area (see Section 3), the impacts related to transportation that might result from implementation of the Merced to Fresno Section of the HST Project, and the mitigation measures that would reduce these impacts. This report has been designed to meet the requirements for subsequent analysis set forth in the Statewide Program EIR/EIS (Authority and FRA 2005) prepared for the project.

Section 2 of this report provides the project description. Section 3 describes the purpose and methods of this study and includes the federal, state, and local laws, regulations, and orders that pertain to transportation modes and potential transportation-related impacts in the study area. Section 4 describes this existing transportation conditions in the study area, and Sections 5 and 6 describe and analyze conditions with the No Project Alternative and with the HST alternatives, respectively. Section 7 describes potential mitigation measures. Section 8 cites the sources used to prepare this document, and Section 9 lists the specialists who prepared this report and their qualifications.

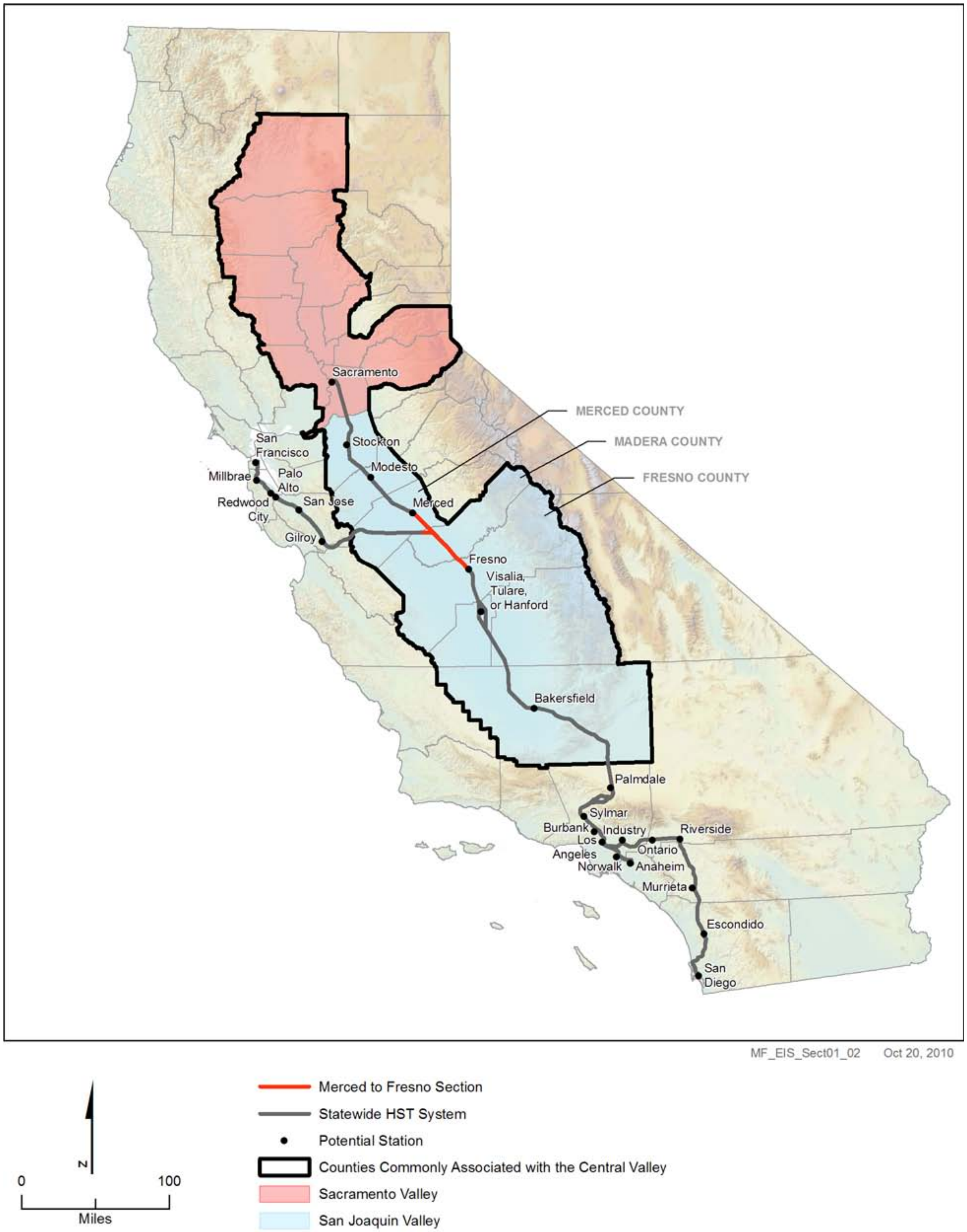


Figure 1-1
HST System in California

2.0 Project Description

The purpose of the Merced to Fresno Section of the HST project is to implement the California HST System between Merced and Fresno, providing the public with electric-powered high-speed rail service that provides predictable and consistent travel times between major urban centers and connectivity to airports, mass transit systems, and the highway network in the south San Joaquin Valley, and to connect the northern and southern portions of the HST System. The approximately 65-mile-long corridor between Merced and Fresno is an essential part of the statewide HST System. The Merced to Fresno Section is the location where the HST would intersect and connect with the Bay Area and Sacramento branches of the HST System; it would provide a potential location for the heavy maintenance facility (HMF) where the HSTs would be assembled and maintained, as well as a test track for the trains; it would also provide Merced and Fresno access to a new transportation mode and would contribute to increased mobility throughout California.

2.1 No Project Alternative

The No Project Alternative refers to the projected growth planned for the region through the 2035 time horizon without the HST project and serves as a basis of comparison for environmental analysis of the HST build alternatives. The No Project Alternative includes planned improvements to the highway, aviation, conventional passenger rail, and freight rail systems in the Merced to Fresno project area. There are many environmental impacts that would result under the No Project Alternative.

2.2 High-Speed Train Alternatives

As shown in Figure 2-1, there are three HST alignment alternatives proposed for the Merced to Fresno Section of the HST System: the UPRR/SR 99 Alternative, which would primarily parallel the UPRR railway; the BNSF Alternative, which would parallel the BNSF railway for a portion of the distance between Merced and Fresno; and the Hybrid Alternative, which combines features of the UPRR/SR 99 and BNSF alternatives. In addition, there is an HST station proposed for both the City of Merced and the City of Fresno, there is a wye connection (see text box on page 2-3) west to the Bay Area, and there are five potential sites for a proposed HMF.

2.2.1 UPRR/SR 99 Alternative

This section describes the UPRR/SR 99 Alternative, including the Chowchilla design options, wyes, and HST stations.

2.2.1.1 North-South Alignment

The north-south alignment of the UPRR/SR 99 Alternative would begin at the HST station in Downtown Merced, located on the west side of the UPRR right-of-way. South of the station and leaving Downtown Merced, the alternative would be at-grade and cross under SR 99. Approaching the City of Chowchilla, the UPRR/SR 99 Alternative has two design options: the East Chowchilla design option, which would pass Chowchilla on the east side of town, and the West Chowchilla design option, which would pass Chowchilla 3 to 4 miles west of the city before turning back to rejoin the UPRR/SR 99 transportation corridor. These design options would take the following routes:

- **East Chowchilla design option:** This design option would transition from the west side of the UPRR/SR 99 corridor to an elevated structure as it crosses the UPRR railway and N Chowchilla Boulevard just north of Avenue 27, continuing on an elevated structure away from the UPRR corridor along the west side of and parallel to SR 99 to cross Berenda Slough. Toward the south side of Chowchilla, this design option would cross over SR 99 north of the SR 99/SR 152 interchange near Avenue 23½ south of Chowchilla. Continuing south on the east side of SR 99 and the UPRR corridor, this design option would remain elevated for 7.1 miles through the communities of

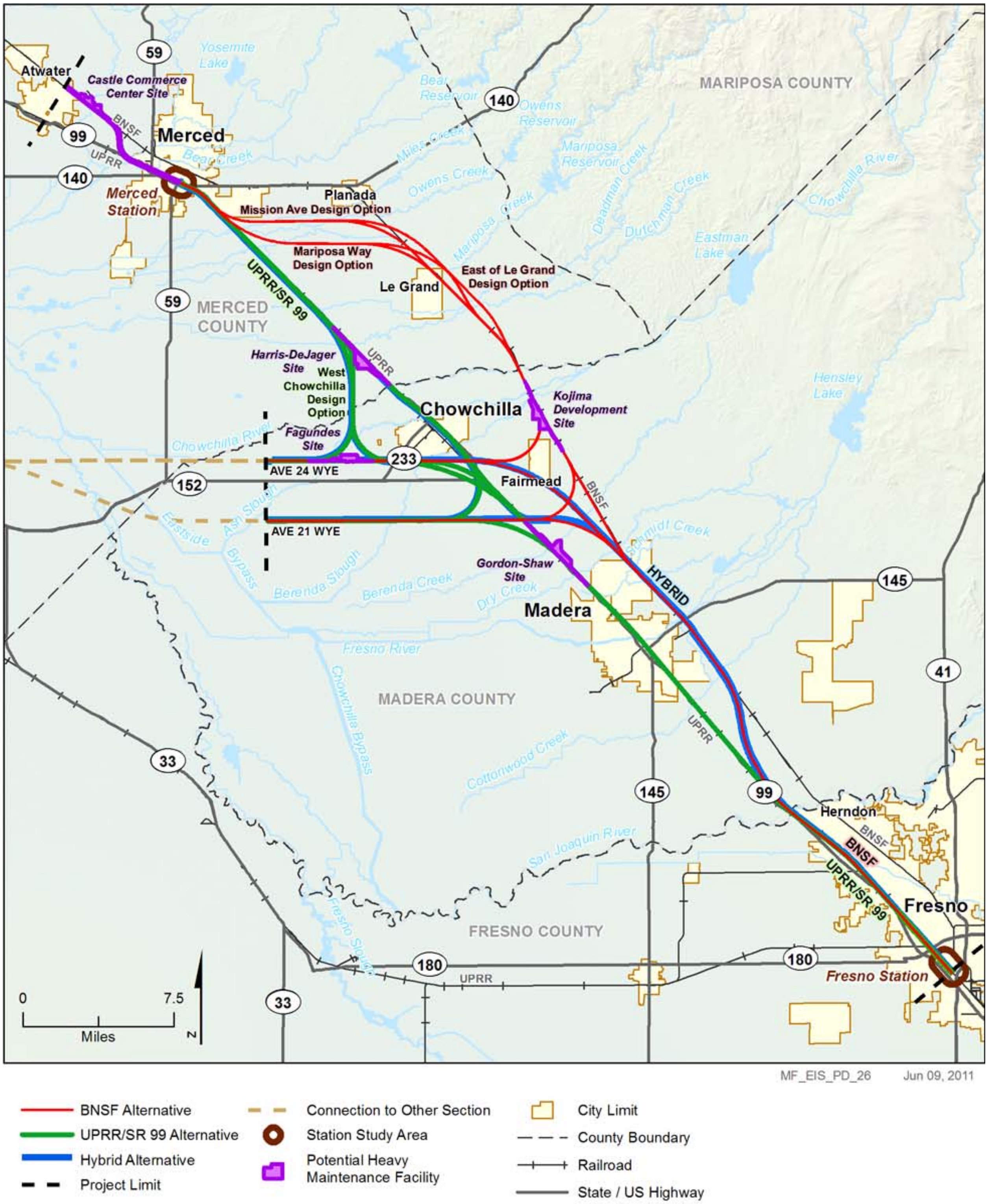


Figure 2-1
Merced to Fresno Section HST Alternatives

Fairmead and Berenda until reaching the Dry Creek Crossing. The East Chowchilla design option connects to the HST sections to the west via either the Ave 24 or Ave 21 wyes (described below).

- **West Chowchilla design option:** This design option would travel due south from Sandy Mush Road north of Chowchilla, following the west side of Road 11¾. The alignment would turn southeast toward the UPRR/SR 99 corridor south of Chowchilla. The West Chowchilla design option would cross over the UPRR and SR 99 east of the Fairmead city limits to again parallel the UPRR/SR 99 corridor. The West Chowchilla design option would result in a net decrease of approximately 13 miles of track for the HST System compared to the East Chowchilla design option and would remain outside the limits of the City of Chowchilla. The West Chowchilla design option connects to the HST sections to the west via the Ave 24 Wye, but not the Ave 21 Wye.

The UPRR/SR 99 Alternative would continue toward Madera along the east side of the UPRR south of Dry Creek and remain on an elevated profile for 8.9 miles through Madera. After crossing over Cottonwood Creek and Avenue 12, the HST alignment would transition to an at-grade profile and continue to be at-grade until north of the San Joaquin River. After the alternative crosses the San Joaquin River, it would rise over the UPRR railway on an elevated guideway, supported by straddle bents, before crossing over the existing Herndon Avenue and again descending into an at-grade profile and continuing west of and parallel to the UPRR right-of-way. After elevating to cross the UPRR railway on the southern bank of the San Joaquin River, south of Herndon Avenue, the alternative would transition from an elevated to an at-grade profile. Traveling south from Golden State Boulevard at-grade, the alternative would cross under the reconstructed Ashlan Avenue and Clinton Avenue overhead structures. Advancing south from Clinton Avenue between Clinton Avenue and Belmont Avenue, the HST guideway would run at-grade adjacent to the western boundary of the UPRR right-of-way and then enter the HST station in Downtown Fresno. The HST guideway would descend in a retained-cut to pass under the San Joaquin Valley Railroad spur line and SR 180, transition back to at-grade before Stanislaus Street, and continue to be at-grade into the station. As part of a station design option, Tulare Street would become either an overpass or undercrossing at the station.

2.2.1.2 Wye Design Options

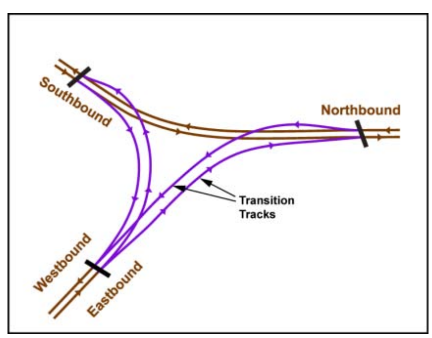
The following text describes the wye connection from the San Jose to Merced Section to the Merced to Fresno Section. There are two variations of the Ave 24 Wye for the UPRR/SR 99 Alternative because of the West Chowchilla design option. The Ave 21 Wye does not connect to the West Chowchilla design option and therefore does not have a variation.

<u>Ave 24 Wye</u>

The Ave 24 Wye design option would travel along the south side of eastbound Avenue 24 toward the UPRR/SR 99 Alternative and would begin diverging onto two sets of tracks west of Road 11 and west of the City of Chowchilla. Under the East Chowchilla design option, the northbound set of tracks would travel northeast across Road 12, joining the UPRR/SR 99 north-south alignment on the west side of the UPRR right-of-way just north of Sandy Mush Road. Under the West Chowchilla design option, the northbound set of tracks would travel northeast across Road 12 and would join the UPRR/SR 99 north-south alignment just south of Avenue 26. The southbound HST guideway would continue east along Avenue 24, turning south near SR 233 southeast of Chowchilla, crossing SR 99 and the UPRR railway to connect to the UPRR/SR 99 Alternative north-south alignment on the east side of the UPRR near Avenue 21½. Under the West Chowchilla design option, the southbound tracks would turn south near Road 16 south of Chowchilla, crossing SR 99

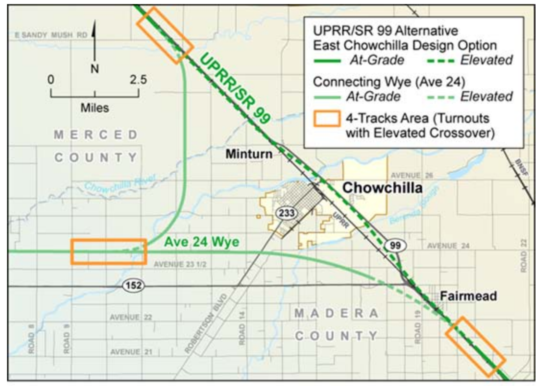
What is a "Wye"?

The word "wye" refers to the "Y"-like formation that is created where train tracks branch off the mainline to continue in different directions. The transition to a wye requires splitting two tracks into four tracks that cross over one another before the wye "legs" can diverge in opposite directions to allow bidirectional travel. For the Merced to Fresno Section of the HST System, the two tracks traveling east-west from the San Jose to Merced Section must become four tracks—a set of two tracks branching to the north and a set of two tracks branching to the south.

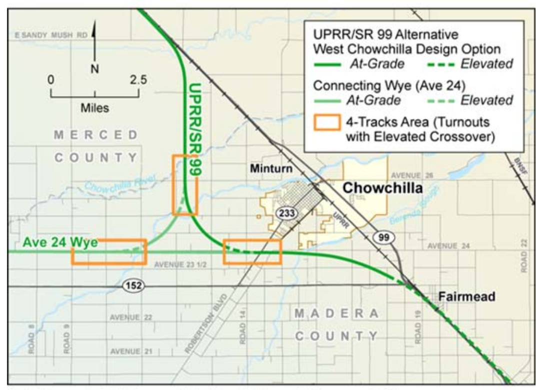


and the UPRR to connect to the UPRR/SR 99 north-south alignment on the east side of the UPRR adjacent to the city limits of Fairmead.

Figure 2-2a shows the wye alignment for the East Chowchilla design option and Figure 2-2b shows the alignment for the West Chowchilla design option. Together, the figures illustrate the difference in the wye triangle formation for each design option connection. The north-south alignment of the West Chowchilla design option between Merced and Fresno diverges along Avenue 24 onto Road 12, on the north branch of the wye, allowing the HST alternative to avoid traveling through Chowchilla and to avoid constraining the city within the wye triangle.



(a) Ave 24 Wye with the East Chowchilla Design Option



(b) Ave 24 Wye with the West Chowchilla Design Option

Figure 2-2a and b
Ave 24 Wye and Chowchilla Design Options

Ave 21 Wye

The Ave 21 Wye would travel along the north side of Avenue 21. Just west of Road 16, the HST tracks would diverge north and south to connect to the UPRR/SR 99 Alternative, with the north leg of the wye joining the north-south alignment at Avenue 23½ and the south leg at Avenue 19½.

2.2.1.3 HST Stations

The Downtown Merced and Downtown Fresno station areas would each occupy several blocks, to include station plazas, drop-offs, a multimodal transit center, and parking structures. The areas would include the station platform and associated building and access structure, as well as lengths of platform tracks to accommodate local and express service at the stations. As currently proposed, both the Downtown Merced and Downtown Fresno stations would be at-grade, including all trackway and platforms, passenger services and concessions, and back-of-house functions.

Downtown Merced Station

The Downtown Merced Station would be between Martin Luther King Jr. Way to the northwest and G Street to the southeast. The station would be accessible from both sides of the UPRR, but the primary station house would front 16th Street. The major access points from SR 99 include V Street, R Street, Martin Luther King Jr. Way, and G Street. Primary access to the parking facility would be from West 15th Street and West 14th Street, just one block east of SR 99. The closest access to the parking facility from the SR 99 freeway would be R Street, which has a full interchange with the freeway. The site proposal includes a parking structure that would have the potential for up to 6 levels with a capacity of approximately 2,250 cars and an approximate height of 50 feet.

Downtown Fresno Station Alternatives

There are two station alternatives under consideration in Fresno: the Mariposa Street Station Alternative and the Kern Street Station Alternative.

Mariposa Street Station Alternative

The Mariposa Street Station Alternative is located in Downtown Fresno, less than 0.5 mile east of SR 99. The station would be centered on Mariposa Street and bordered by Fresno Street on the north, Tulare

Street on the south, H Street on the east, and G Street on the west. The station building would be approximately 75,000 square feet, with a maximum height of approximately 60 feet. The two-level station would be at-grade, with passenger access provided both east and west of the HST guideway and the UPRR tracks, which would run parallel with one another adjacent to the station. Entrances would be located at both G and H Streets. The eastern entrance would be at the intersection of H Street and Mariposa Street, with platform access provided via the pedestrian overcrossing. The main western entrance would be located at G Street and Mariposa Street.

The majority of station facilities would be located east of the UPRR tracks. The station and associated facilities would occupy approximately 18.5 acres, including 13 acres dedicated to the station, bus transit center, surface parking lots, and kiss-and-ride accommodations. A new intermodal facility would be included in the station footprint on the parcel bordered by Fresno Street to the north, Mariposa Street to the south, Broadway Street to the east, and H Street to the west. The site proposal includes the potential for up to 3 parking structures occupying a total of 5.5 acres. Two of the three potential parking structures would each sit on 2 acres, and each would have a capacity of approximately 1,500 cars. The third parking structure would have a slightly smaller footprint (1.5 acres), with 5 levels and a capacity of approximately 1,100 cars. Surface parking lots would provide approximately 300 additional parking spaces.

Kern Street Station Alternative

The Kern Street Station Alternative for the HST station would also be in Downtown Fresno and would be centered on Kern Street between Tulare Street and Inyo Street. This station would include the same components and acreage as the Mariposa Street Station Alternative, but the station would not encroach on the historic Southern Pacific Railroad depot just north of Tulare Street and would not require relocation of existing Greyhound facilities. Two of the 3 potential parking structures would each sit on 2 acres and each would have a capacity of approximately 1,500 cars. The third structure would have a slightly smaller footprint (1.5 acres) and a capacity of approximately 1,100 cars. Like the Mariposa Street Station Alternative, the majority of station facilities under the Kern Street Station Alternative would be east of the HST tracks.

2.2.2 BNSF Alternative

This section describes the BNSF Alternative, including the Le Grand design options and wyes. It does not include a discussion of the HST stations, because the station descriptions are identical for each of the three HST alignment alternatives.

2.2.2.1 North-South Alignment

The north-south alignment of the BNSF Alternative would begin at the proposed Downtown Merced Station. This alternative would remain at-grade through Merced and would cross under SR 99 at the south end of the city. Just south of the interchange at SR 99 and E Childs Avenue, the BNSF Alternative would cross over SR 99 and UPRR as it begins to curve to the east, crossing over the E Mission Avenue interchange. It would then travel east to the vicinity of Le Grand, where it would turn south and travel adjacent to the BNSF tracks.

To minimize impacts on the natural environment and the community of Le Grand, the project design includes four design options:

- **Mission Ave design option:** This design option would turn east to travel along the north side of Mission Avenue at Le Grand and then would elevate through Le Grand adjacent to and along the west side of the BNSF corridor.
- **Mission Ave East of Le Grand design option:** This design option would vary from the Mission Ave design option by traveling approximately 1 mile farther east before turning southeast to cross Santa Fe Avenue and the BNSF tracks south of Mission Avenue. The HST alignment would parallel the BNSF for a half-mile to the east, avoiding the urban limits of Le Grand. This design option would

cross Santa Fe Avenue and the BNSF railroad again approximately one-half mile north of Marguerite Road and would continue adjacent to the west side of the BNSF corridor.

- **Mariposa Way design option:** This design option would travel 1 mile farther than the Mission Ave design option before crossing SR 99 near Vassar Road and turning east toward Le Grand along the south side of Mariposa Way. East of Simonson Road, the HST alignment would turn to the southeast. Just prior to Savana Road in Le Grand, the HST alignment would transition from at-grade to elevated to pass through Le Grand on a 1.7-mile-long guideway adjacent to and along the west side of the BNSF corridor.
- **Mariposa Way East of Le Grand design option:** This design option would vary from the Mariposa Way design option by traveling approximately 1 mile farther east before turning southeast to cross Santa Fe Avenue and the BNSF tracks less than one-half mile south of Mariposa Way. The HST alignment would parallel the BNSF to the east of the railway for a half-mile, avoiding the urban limits of Le Grand. This design option would cross Santa Fe Avenue and the BNSF again approximately a half-mile north of Marguerite Road and would continue adjacent to the west side of the BNSF corridor.

Continuing southeast along the west side of BNSF, the BNSF Alternative would begin to curve just before Plainsburg Road through a predominantly rural and agricultural area. One mile south of Le Grand, the HST alignment would cross Deadman and Dutchman creeks. The alignment would deviate from the BNSF corridor just southeast of S White Rock Road, where it would remain at-grade for another 7 miles, except at the bridge crossings, and would continue on the west side of the BNSF corridor through the community of Sharon. The HST alignment would continue at-grade through the community of Kismet until crossing at Dry Creek. The BNSF Alternative would then continue at-grade through agricultural areas along the west side of the BNSF corridor through the community of Madera Acres north of the City of Madera. South of Avenue 15 east of Madera, the alignment would transition toward the UPRR corridor, following the east side of the UPRR corridor near Avenue 9 south of Madera, then continuing along nearly the same route as the UPRR/SR 99 Alternative over the San Joaquin River to enter the community of Herndon. After crossing the San Joaquin River, the alignment would be the same as for the UPRR/SR 99 Alternative

2.2.2.2 Wye Design Options

The Ave 24 Wye and the Ave 21 Wye would be the same as described for the UPRR/SR 99 Alternative (East Chowchilla design option), except as noted below.

Ave 24 Wye

As with the UPRR/SR 99 Alternative, the Ave 24 Wye would follow along the south side of Avenue 24 and would begin diverging into two sets of tracks (i.e., four tracks) beginning west of Road 17. Two tracks would travel north near Road 20½, where they would join the north-south alignment of the BNSF Alternative on the west side of the BNSF corridor near Avenue 26½. The two southbound tracks would join the BNSF Alternative on the west side of the BNSF corridor south of Avenue 21.

Ave 21 Wye

As with the UPRR/SR 99 Alternative, the Ave 21 Wye would travel along the north side of Avenue 21. Two tracks would diverge, turning north and south to connect to the north-south alignment of the BNSF Alternative just west of Road 21. The north leg of the wye would join the north-south alignment just south of Avenue 24 and the south leg would join the north-south alignment just east of Frontage Road/Road 26 north of the community of Madera Acres.

2.2.3 Hybrid Alternative

This section describes the Hybrid Alternative, which generally follows the alignment of the UPRR/SR 99 Alternative in the north and the BNSF Alternative in the south. It does not include a discussion of the HST stations because the station descriptions are identical for each of the three HST alternatives.

2.2.3.1 North-South Alignment

From north to south, generally, the Hybrid Alternative would follow the UPRR/SR 99 alignment with either the West Chowchilla design option with the Ave 24 Wye or the East Chowchilla design option with the Ave 21 Wye. Approaching the Chowchilla city limits, the Hybrid Alternative would follow one of two options:

- In conjunction with the Ave 24 Wye, the HST alignment would veer due south from Sandy Mush Road along a curve and would continue at-grade for 4 miles parallel to and on the west side of Road 11¾. The Hybrid Alternative would then curve to a corridor on the south side of Avenue 24 and would travel parallel for the next 4.3 miles. Along this curve, the southbound HST track would become an elevated structure for approximately 9,000 feet to cross over the Ave 24 Wye connection tracks and Ash Slough, while the northbound HST track would remain at-grade. Continuing east on the south side of Avenue 24, the HST alignment would become identical to the Ave 24 Wye connection for the BNSF Alternative and would follow the alignment of the BNSF Alternative until Madera.
- In conjunction with the Ave 21 Wye connection, the HST alignment would transition from the west side of UPRR and SR 99 to an elevated structure as it crosses the UPRR and N Chowchilla Boulevard just north of Avenue 27, continuing on an elevated structure along the west side of and parallel to SR 99 away from the UPRR corridor while it crosses Berenda Slough. Toward the south side of Chowchilla, the alignment (with the Ave 21 Wye) would cross over SR 99 north of the SR 99/SR 152 interchange near Avenue 23½ south of Chowchilla. It would continue to follow along the east side of SR 99 until reaching Avenue 21, where it would curve east and run parallel to Avenue 21, briefly. The alignment would then follow a path similar to the Ave 21 Wye connection for the BNSF Alternative, but with a tighter 220 mph curve. The alternative would then follow the BNSF Alternative alignment until Madera.

Through Madera and until reaching the San Joaquin River, the Hybrid Alternative is the same as the BNSF Alternative. Once crossing the San Joaquin River, the alignment of the Hybrid Alternative becomes the same as for the UPRR/SR 99 Alternative.

2.2.3.2 Wye Design Options

The wye connections for the Hybrid Alternative follow Avenue 24 and Avenue 21, similar to those of the UPRR/SR 99 and BNSF alternatives.

Ave 24 Wye

The Ave 24 Wye is the same as the combination of the UPRR/SR 99 Alternative with the West Chowchilla design option, and the Ave 24 Wye for the BNSF Alternative.

Ave 21 Wye

The Ave 21 Wye is similar to the combination of the UPRR/SR 99 Alternative with the Ave 21 Wye on the northbound leg and the BNSF Alternative with the Ave 21 Wye on the southbound leg. However, the south leg under the Hybrid Alternative would follow a tighter, 220 mph curve than the BNSF Alternative, which follows a 250 mph curve.

2.2.4 Heavy Maintenance Facility Alternatives

The Authority is studying five HMF sites (see Figure 2-1) within the Merced to Fresno Section, one of which may be selected.

- **Castle Commerce Center HMF site** – A 370-acre site located 6 miles northwest of Merced, at the former Castle Air Force Base in northern unincorporated Merced County. It is adjacent to and on the east side of the BNSF mainline, 1.75 miles south of the UPRR mainline, off of Santa Fe Drive and Shuttle Road, 2.75 miles from the existing SR 99 interchange. The Castle Commerce Center HMF would be accessible by all HST alternatives.
- **Harris-DeJager HMF site** – A 401-acre site located north of Chowchilla adjacent to and on the west side of the UPRR corridor, along S Vista Road and near the SR 99 interchange under construction. The Harris-DeJager HMF would be accessible by the UPRR/SR 99 and Hybrid alternatives if coming from the Ave 21 Wye and the UPRR/SR 99 Alternative with the East Chowchilla design option and the Ave 24 Wye.
- **Fagundes HMF site** – A 231-acre site, located 3 miles southwest of Chowchilla on the north side of SR 152, between Road 11 and Road 12. This HMF would be accessible by all HST alternatives with the Ave 24 Wye.
- **Gordon-Shaw HMF site** – A 364-acre site adjacent to and on the east side of the UPRR corridor, extending from north of Berenda Boulevard to Avenue 19. The Gordon-Shaw HMF would be accessible from the UPRR/SR 99 Alternative.
- **Kojima Development HMF site** – A 392-acre site on the west side of the BNSF corridor east of Chowchilla, located along Santa Fe Drive and Robertson Boulevard (Avenue 26). The Kojima Development HMF would be accessible by the BNSF Alternative with the Ave 21 Wye.

3.0 Methodology

This section describes the analysis methodology applied for the roadway and intersection analysis that defined the level of service (LOS) thresholds. Also discussed in this section are the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) significance criteria guidelines to identify project traffic impacts.

3.1 Study Area

The study area for the Merced to Fresno Section of the project starts north of the City of Merced and ends in Downtown Fresno. The study area for direct impacts includes the area of potential disturbance associated with project construction as well as intersections and transportation facilities within 0.5 mile, particularly around stations. For indirect impacts on transportation, the study area includes the extent of the roadway networks that may reflect change in circulation due to project conditions.

3.2 Analysis Methodologies

3.2.1 Traffic Operational Standards

The efficiency of traffic operations at a location is measured in terms of LOS, the primary unit of measure for stating the operating quality of a highway, roadway, or intersection. For highway and roadway segments, LOS is calculated by comparing the actual number of vehicles using a facility to its carrying capacity. At intersections, LOS measures delay experienced per vehicle.

The *Highway Capacity Manual* (HCM) (Transportation Research Board 2000) is a widely referenced source, providing techniques to measure transportation facility performance. Using the HCM procedures, the quality of traffic operations is graded using one of six LOS designations: A, B, C, D, E, or F. An LOS designation of LOS A represents excellent (free-flow) conditions while an LOS designation of LOS F represents oversaturated (congested) conditions.

3.2.1.1 Intersections

At intersections, LOS is defined based on the delay experienced per vehicle. The LOS methodology for signalized intersections assesses the effects of signal type, timing, phasing and progression on average delay. Average delay per vehicle and LOS for signalized intersections is defined quantitatively in Table 3.2-1.

Table 3.2-1
Level of Service and Average Vehicular Delay Definition for Signalized Intersections

Level of Service	Delay per Vehicle (seconds)	Definition
A	$\leq$ 10	EXCELLENT. No vehicle waits longer than one red light and no approach phase is fully used.
B	>10 and $\leq$ 20	VERY GOOD. An occasional approach phase is fully used; many drivers begin to feel somewhat restricted within groups of vehicles.
C	>20 and $\leq$ 35	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	>35 and $\leq$ 55	FAIR. Delays may be substantial during portions of rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.

Level of Service	Delay per Vehicle (seconds)	Definition
E	>55 and ≤ 80	POOR. Represents the maximum vehicles that intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	> 80	FAILURE Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Tremendous delays with continuously increasing queue lengths.
Source: Transportation Research Board (2000).		

Unsignalized intersections include two-way stop-controlled (TWSC) and all-way stop-controlled (AWSC) intersections. The LOS for an AWSC intersection is defined by delay for the intersection as a whole, whereas, for a TWSC intersection, LOS is based on the delay for the worst operating movement. The LOS and delay parameters for unsignalized intersections are listed in Table 3.2-2.

Table 3.2-2
Level of Service and Average Vehicular Delay
Definition for Unsignalized Intersections

Level of Service	Delay per Vehicle (seconds)
A	<10
B	>10 and <15
C	>15 and <25
D	>25 and <35
E	>35 and <50
F	>50
Source: Transportation Research Board (2000).	

3.2.1.2 Roadways

The LOS indicators for roadway segments are based on (1) the volume of traffic for designated sections of roadway during a typical day and (2) the practical vehicular capacity of that segment. These two measures for each monitored segment of the roadway system are expressed as a ratio. The volume to capacity (V/C) ratio is then converted to an alpha descriptor identifying operating conditions and expressed as an LOS (LOS A through LOS F). LOS A identifies the best operating conditions along a section of roadway and is characterized by free-flow traffic, low volumes, and little or no restrictions on maneuverability. LOS F characterizes forced traffic flow with high traffic densities, slow travel speeds, and often stop-and-go conditions.

The theoretical daily capacity of a roadway is determined by the number of lanes and the type of facility. The daily capacities, by roadway type, used in this report vary by agency and are shown in Tables 3.2-3 and 3.2-4 for Merced and Madera counties, respectively. Table 3.2-5 defines and describes the LOS criteria for the roadway segment analysis.

Table 3.2-3
Roadway Segment Capacities by Type – Merced County

Roadway Type	Capacity					
	LOS A	LOS B	LOS C	LOS D	LOS E	LOS F
Two-lane[a]	400	900	1,400	1,700	2,000	>2,000
Multi-lane Rural without Access Control[b]	600	1,000	1,500	1,800	2,000	>2,000
Controlled Access Highways[c]	1,400[d]	2,000[e]	3,000[f]	3,600[f]	2,000	>2,000

[a]Two-way capacity reported in vehicles/hour.
[b]Capacity reported as vehicles per hour per lane.
[c]Two-lanes capacity reported in vehicle per hour, one direction.
[d]Each additional lane serves volume of 1000 vehicles/hour.
[e]Each additional lane serves volume of 1500 vehicles/hour.
[f]Each additional lane serves volume of 1800 vehicles/hour.
Source: Merced County (1990).

Table 3.2-4
Roadway Segment Capacities by Type – Madera County

Roadway Type	Capacity[a]					
	LOS A	LOS B	LOS C	LOS D	LOS E	LOS F
Freeways	700	1,100	1,660	1,850	2,000	>2,000
Two-Lane Rural Highway	120	240	395	675	1,145	>1,145
Multi-Lane Rural Highway	470	945	1,285	1,585	1,800	>1,800
Expressway	720	840	960	1,080	1,200	>1,200
Arterial	450	525	600	675	750	>750
Collector	300	350	400	450	500	>500

[a]Capacity reported in vehicles per hour per lane
Source: Madera County (1995).

Table 3.2-5
Roadway Segment Level of Service Criteria

Level of Service	Volume-to-Capacity Ratio	Definition
A	0.00 – 0.60	Free-flow speeds prevail. Vehicles are almost unimpeded in their ability to maneuver within the traffic stream
B	0.61 – 0.70	Reasonably free-flow speeds are maintained. The ability to maneuver within traffic is only slightly restricted.
C	0.71 – 0.80	Flow with speeds at or near free-flow speed of the roadway. Freedom to maneuver within the traffic stream is noticeably restricted and lane changes require more care and vigilance on the part of the driver.

Level of Service	Volume-to-Capacity Ratio	Definition
D	0.81 – 0.90	Speeds begin to decline slightly with increasing flows. In this range, density begins to increase somewhat more quickly with increasing flow. Freedom to maneuver within the traffic stream is noticeably limited.
E	0.91 – 1.00	Operation at capacity with no usable gaps in the traffic stream. Any disruption to the traffic stream has little or no room to dissipate.
F	>1.00	Breakdown the traffic flow with long queues of traffic. Unacceptable conditions.
Source: Authority (2010).		

3.3 Significance Criteria

Significance criteria are used to determine if the project has significant environmental effect. The thresholds of significance are a set of criteria set forth by an agency for evaluating impacts. This section presents federal, state, regional, and local guidelines and thresholds of significance for assessing traffic impacts. These criteria are used in Section 6.0 of this report to identify traffic-impact significance.

3.3.1 Federal Regulations

Key federal transportation regulations that are most relevant to the proposed project are summarized below.

National Environmental Policy Act of 1969 [42 United States Code [U.S.C]. Section 4321 et seq.]

NEPA requires the consideration of potential environmental impacts, which might include potential impacts on transportation and traffic systems, in the evaluation of any major federal action. NEPA also obligates federal agencies to consider the environmental consequences and costs in their projects and programs as part of the planning process and identify the appropriate mitigation measure to minimize potential impacts. General NEPA procedures are set forth in the Council on Environmental Quality regulations (CFR Part 1500).

Procedures for considering Environmental Impacts [64 Federal Register 101, 28545]

These FRA procedures state that EISs should consider possible impact on all modes of transportation, including passenger and freight rail, as well as potential impacts on roadway traffic congestion.

Federal Transit Act [49 U.S.C. Chapter 53]

This act fosters development and revitalization of public transportation systems that maximize safe, secure and efficient personal mobility; minimize environmental impacts; and minimize transportation-related fuel consumption and reliance on foreign oil.

Title 23, U.S.C - Highways, Statewide Planning [23 U.S.C. Section 135]

This legislation provides the general requirements for statewide planning to encourage and promote the safe and efficient management, operation, and development of surface transportation systems.

3.3.2 State Regulations

Key state transportation regulations that are most relevant to the proposed project are summarized below.

California Environmental Quality Act [Section 21000 et seq.] and CEQA Guidelines [Section 15000 et seq.]

CEQA requires state and local agencies to identify the significant environmental impacts of their actions, including potential significant impact on transportation and traffic systems, and to avoid or mitigate those impacts, when feasible.

California Government Code Section 65080

The State of California requires each transportation planning agency to prepare and adopt an RTP directed at achieving a coordinated and balanced regional transportation system.

California Streets and Highways Code [Section 1 et seq.]

Provides the provisions and standards for the administration of the statewide streets and highways system.

Designated State Route and Interstate Highway facilities are under the jurisdiction of Caltrans, except where management of the facility has been delegated to the county transportation authority. Operations analysis of Caltrans facilities is conducted according to the methodology set forth in the *Guide for the Preparation of Traffic Impact Studies* (Caltrans 2002).

Caltrans uses the methodologies outlined in the HCM and has a target LOS threshold of LOS C for intersections and highway facilities. The Caltrans guide provides guidelines for determining project fair-share contributions (Caltrans 2002).

Within the study area, the Caltrans LOS standard is LOS C on routes within the Interregional Road System, which includes I-5, SR 99, SR 140 from Merced to Mariposa County, and SR 152. The LOS standard is LOS D on all other state routes such as SR 41, SR 59, SR 180, and SR 233.

3.3.3 Regional and Local Regulations

This section identifies regional and local plans and policies that were identified and considered in the preparation of this analysis. The following types of regulatory framework were reviewed:

- Traffic Congestion Relief and Spending Limit Act to assist in the land-use decision-making process and to address transportation and air quality impacts in a county; In urbanized counties, a designated congestion management agency is responsible for implementing the Traffic Congestion Relief and Spending Limit Act
- General Plan Policies
- Transportation and Circulation elements
- Alternative Transportation Plans, Policies, and Programs; planning staff must consider whether the project conflicts with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts and bicycle racks).

Merced County Association of Governments (MCAG)

The 2007 RTP for Merced County establishes an LOS standard of LOS D for the regional road network. Any segment of roadway that is operating at worse than LOS D is considered to be a deficiency in the transportation system. These deficiencies may then become the basis for project priorities in the capital improvement program (MCAG 2007a).

Madera County Transportation Commission

The Madera County 2007 RTP establishes transportation policies that do the following:

- Design, develop, and maintain a multimodal transportation system that is developed through a cooperative process, establishes mode choices, and supports air quality and energy conservation goals.
- Preserve and enhance transportation corridors.
- Encourage land use design that will support transit and alternative modes through infill development and higher density, walkable neighborhoods.

The RTP establishes a minimum standard of LOS D for the analysis of the county's transportation system (local streets and roads) and LOS C for state routes (Madera County Transportation Commission 2007).

County of Madera

The Madera County General Plan (1995) establishes LOS D as the minimum standard for roadways. The plan also calls for achieving LOS C whenever possible, but recognizes that doing so may not be feasible for financial reasons. The plan includes a process for traffic impact analysis and provides LOS lane capacities for various types of road facilities.

Council of Fresno County Governments

The Fresno COG, formed in 1969, includes the County of Fresno and 15 incorporated cities as member agencies. Its role is to foster intergovernmental coordination, undertake process, and provide technical services to its member governments. The major function of the Fresno COG is the activity generated by its responsibility as a designated transportation planning agency, in compliance with federal and state requirements. LOS D has been established as the minimum system-wide LOS traffic standard in Fresno County.

Fresno County Congestion Management Process

The Fresno County Congestion Management Process (CMP) is managed by the Fresno COG and integrated with the Fresno County RTP. The CMP was originally developed in 1991 in response to State legislation, but the program was rescinded in 1997 as allowed under subsequent legislation. The current CMP is designed to meet federal requirements for a congestion management process in urban areas.

CMP objectives include optimizing the efficiency of the existing transportation facilities, developing a multimodal transportation system and reducing vehicle miles travelled (VMT) by encouraging alternative modes of transportation. The CMP network is the Regionally Significant Road System in Fresno County. A process is established to measure existing and future roadway conditions and identify deficient segments (those with LOS below D). The CMP also includes strategies to manage congestion, including Travel Demand Management (TDM), public transit, Intelligent Transportation Systems (ITS) strategies, land use and growth management, and bicycle/pedestrian strategies.

City of Merced

The City of Merced 2015 General Plan (1997, currently under revision) establishes LOS policies for the city. Policy T-1.8 provides for LOS D as a design objective for new growth areas and most existing streets, except under special circumstances. The implementing actions identify that maintaining LOS D is not always feasible or necessary, and further state that, "In central Merced, for example, widening existing streets could create disruption to stable, older neighborhoods. In those areas, 'significant delays' (LOS E) or even LOS F may have to be acceptable at peak hours." (City of Merced 1997.)

The city plan also identifies the implementation of Transportation System Management strategies, including greater transit use, in areas where LOS standards fall below the minimum.

City of Chowchilla

The City of Chowchilla 2040 Draft General Plan (Public Review Draft) (City of Chowchilla 2009) states that the city has adopted an overall LOS standard of LOS C, with peak hour LOS D acceptable in some instances. The plan states that improvements in existing developed areas may be extremely difficult. As a result, there may be instances where a lower LOS is acceptable. The draft plan also identifies the importance of arterial street connectivity and the potential impacts on connectivity from the UPRR Railway corridor and the SR 99 corridor.

The draft plan also identifies the future potential relocation of the Chowchilla Municipal Airport and calls for a review of alternative locations over the next 10 years.

City of Madera

The City of Madera General Plan Update (2009), under Policy CI-23, states that the city seeks to maintain LOS C on all roadways and intersections, with the following exceptions: at-grade railroad crossings and the Downtown District, where LOS D is acceptable.

City of Fresno

City of Fresno General Plan objectives are as follows (City of Fresno 2002):

- Provide a complete and continuous streets and highway system throughout the Fresno Metropolitan area that is safe for vehicle users, bicyclists, and pedestrians that provides efficient movement of people and goods;
- Maintain a coordinated land use and circulation system that conforms to planned growth, minimizes traffic conflicts, reduces impact on adjacent land uses, and preserves the integrity of existing neighborhoods;
- Provide for efficient fiscal management and administration of the streets and highways service delivery system; and
- Preserve and provide scenic corridors by application of appropriate policies and regulations.

Per the City of Fresno Traffic Study Guidelines, all intersections shall operate at an LOS D or better under near-term conditions, unless a finding of overriding consideration was adopted in the Master General Plan EIR. Under long-term conditions, all City intersections shall operate at an LOS D or better, except for ones adopted in the Master General Plan EIR to operate at LOS E or LOS F. The LOS shall be based on average delay for signalized and un-signalized intersections.

For study intersections, the impact is considered significant if the additional traffic generated from the proposed project results in any one of the following (City of Fresno 2006):

- Triggers an intersection operating at an acceptable LOS to operate at unacceptable levels of service;
- Triggers an intersection operating at an unacceptable LOS (LOS E) to operate at LOS F; or
- Increases the average delay for a study intersection that is already operating at an unacceptable LOS.

3.3.4 HST Recommended Criteria

Each section of the HST system will use the HST criteria when determining project impacts and these are generally consistent with the local agency criteria. The recommended criteria below are for signalized and unsignalized intersections and roadway segments. These criteria are applicable to study areas for HST stations, parking facilities, roadway grade-separations, and maintenance facilities, and are defined as follows:

For signalized intersections, the significance criteria are based on an increase in delay based on LOS, as follows:

- An impact is considered to be significant if the addition of project-related traffic results in a reduction in LOS below LOS D.
- For intersections that are projected to operate at LOS E or F under No Project conditions, an impact is considered to be significant if the addition of project-related traffic increases average delay at an intersection by 4 seconds or more.

For unsignalized intersections, the significance criteria are based on an increase in delay for the worst movement for a multi-way stop and the average intersection delay for an all-way stop, as follows:

- An impact is considered to be significant if the addition of project-related traffic results in a reduction in LOS below LOS D.
- For intersections projected to operate at LOS E or F under No Project conditions, an impact is considered to be significant if the addition of project-related traffic increases delay for the worst movement at an intersection by 5 seconds or more, and if the intersection satisfies one or more traffic signal warrants[1] for more than one hour of the day.

For roadway segments, the significance criteria are based on the changes in volume-to-capacity ratio, as follows:

- An impact should be considered to be significant if the addition of project-related traffic results in a reduction in LOS below LOS D.
- For segments that are projected to operate at LOS E or F under No Project conditions, an impact is considered significant if the addition of project-related traffic results in an increase in the V/C ratio by 0.04 or more.

[1] Traffic signal warrants define minimum conditions under which signal installation may be justified.

4.0 Existing Conditions

This section presents the description of existing major roadways, traffic volumes, truck routes and volumes, and transit, and aviation services and facilities within the study area.

4.1 Regional and Local Roadway Network

The system of major roadways parallel to and crossing the HST corridor is part of the local and regional network serving the communities along the study area. All roadways are classified according to their primary functions, as described below.

Freeway – A major roadway with controlled access, devoted exclusively to traffic movement, mainly of a through or regional nature.

Expressway – A major roadway, with a mix of controlled and uncontrolled access, linking freeways with arterials and providing access to major destinations.

Arterial – A major roadway mainly taking traffic to and from expressways and freeways and providing access to major destinations as well as adjacent properties.

Collector – A roadway that collects and distributes traffic to and from arterials and provides access primarily to and from adjacent properties.

Local – The lowest category of roadway providing access to and from individual properties and distributing local traffic to and from the higher roadway classifications, particularly collector streets.

Tables 4.1-1 and 4.1-2 present the different functional classifications of roadways in Merced and Madera counties, respectively.

Table 4.1-1
Merced County Roadway Functional Classification

Road Type	Typical Right-of Way	Speed	Traffic Volume (ADT)[a]
Freeways	120 feet	55+ mph	15,000 – 90,000
Arterials	80 – 120 feet	35 – 55 mph [b]	9,600 – 40,000
Major Collectors	50 – 100 feet	30 – 50 mph[b]	3,800 – 20,000
Minor Collectors	50 – 80 feet	20 – 40 mph[b]	2,800 – 10,000
Local Roads	50 – 70 feet	5 – 30 mph[c]	0 – 3,000

[a] Average Daily Traffic
[b] Generally higher speeds in rural areas
mph = miles per hour
Source: Merced County (1990).

Table 4.1-2
Madera County Roadway Functional Classification

Road Type	Primary Function	Direct Land Access[a]	Speed Limit[b]	Parking
Freeways/ Expressway	Traffic movement	None	45 – 65 mph	Prohibited
Arterials	Traffic movement/land access	Limited	30 – 45 mph	Prohibited[c]
Collectors	Distribute traffic between local streets and arterials	Safety controls, limited regulation	25 - 30 mph	Limited
Local Roads	Land access	Safety controls only	25 mph	Permitted

[a] Safety controls exist on all road types in rural areas.
[b] Speed limits are generally higher in rural areas.
[c] Parking on Arterials is generally permitted in rural areas.
Source: Madera County Transportation Commission (2007).

4.2 Existing Major Roadways

4.2.1 Major State Routes

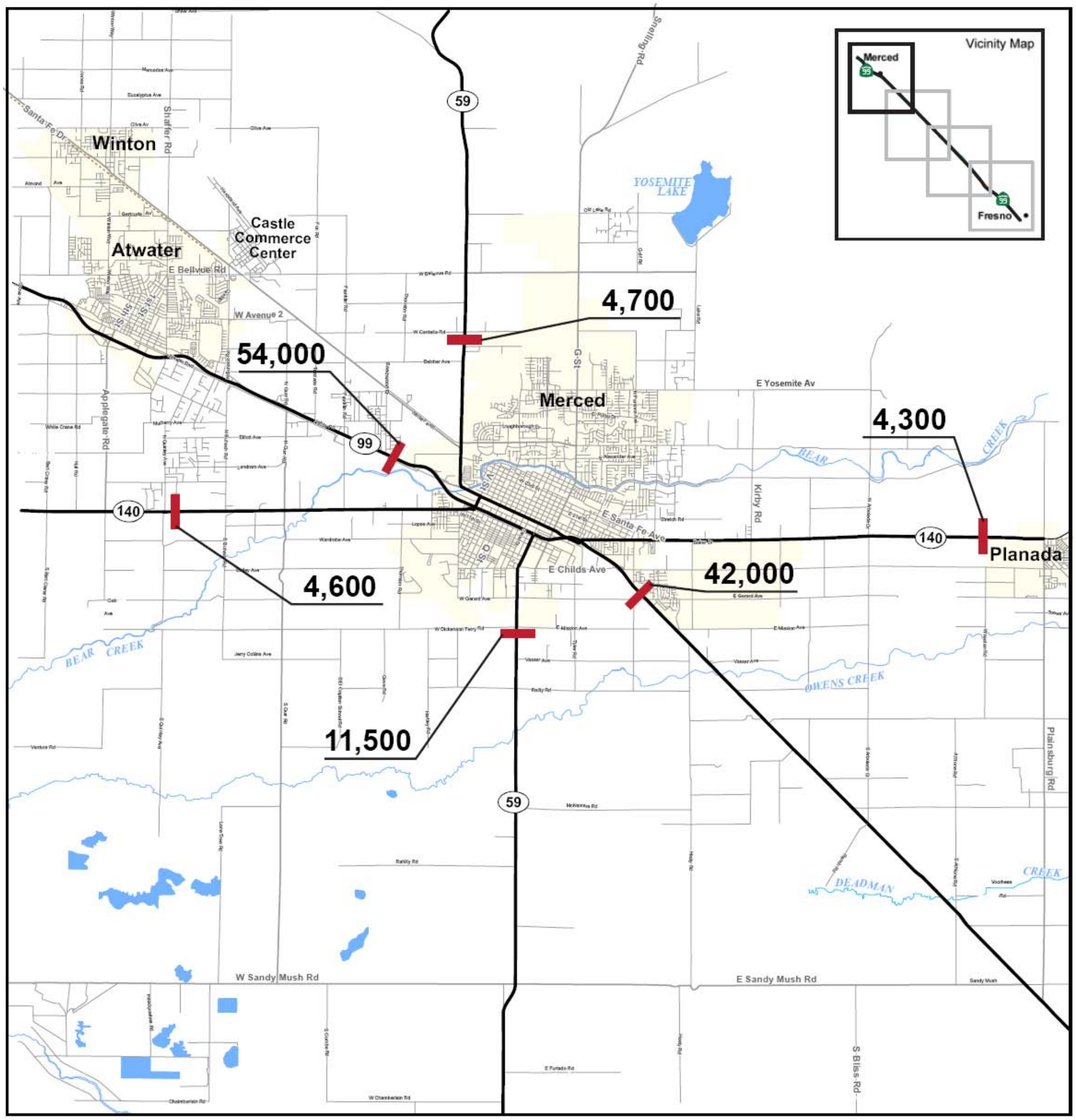
Regional access in the study area is provided by SR 41, SR 59, SR 99, SR 140, SR 145, SR 152, SR 180, and SR 233. These roadways with the volumes are shown in Figures 4.2-1(a) through 4.2-1(d) and are described below.

SR 41 is a north-south route connecting Fresno to Lemoore and I-5 to the south and Yosemite National Park to the north. It is a four-lane freeway between the Fresno County Line and Avenue 10 and extends in the north/south direction through eastern Madera County to the Mariposa County line as a two-lane highway. SR 41 serves as a major access route to Yosemite National Park. The average daily traffic (ADT) ranges between 34,500 and 73,000 vehicles in the Fresno study area.

SR 59 is a north-south route extending between I-5 and SR 99 near Selma. It parallels SR 99 throughout most of the Central Valley and connects some of the valley cities including Shafter, Wasco, Corcoran, and Hanford. The ADT ranges between 4,700 and 11,500 vehicles in the Merced study area.

SR 99 is a major north-south freeway connecting the Central Valley cities, including Merced, Chowchilla, Madera, and Fresno, and serves as a major truck route for the transportation of agricultural products. It is also a major commuter route and connects recreational sites such as Yosemite National Park, the Sierra Nevada forests, Kings Canyon National Park, and Sequoia National Park. SR 99 is currently a four-lane freeway between the Fresno County Line and Avenue 21 and between SR 152 and the Merced County Line. SR 99 is a four-lane expressway between Avenue 21 and SR 152. The ADT ranges between 32,000 and 65,000 vehicles in the study area.

SR 140 is an east-west highway connecting I-5 on the east, traveling through Merced and into Yosemite. It serves as a key gateway to Yosemite National Park as well as serving commercial needs in the area. SR 140 is a two-lane roadway within the study area. The ADT ranges between 4,300 and 4,600 vehicles in the Merced study area.



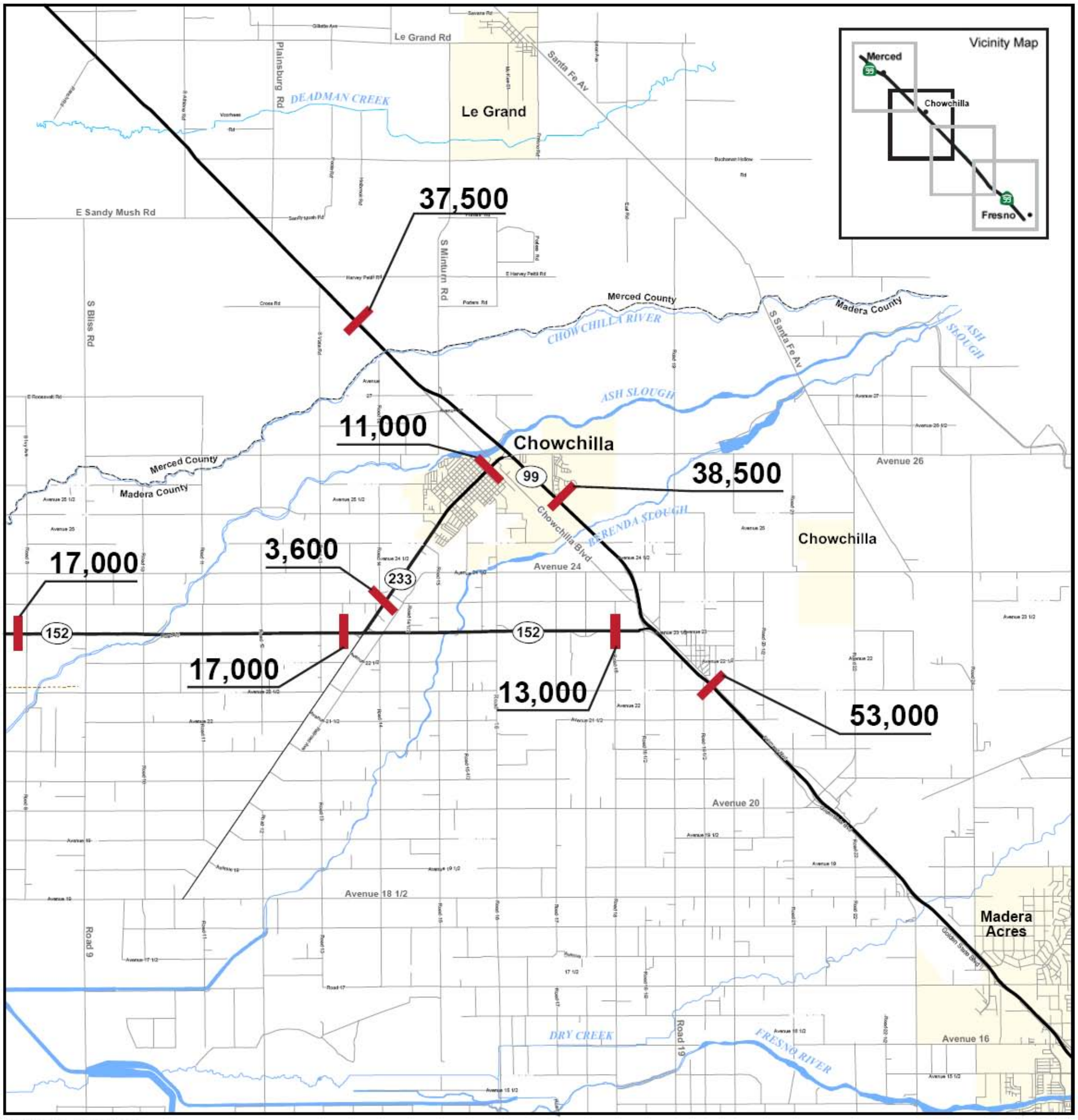
Source: Caltrans

N
NOT TO SCALE

Major Roadways

5,800 Average Daily Traffic volume (2008)

Figure 4.2-1 (a)
Existing Major State Routes and Volumes – Merced Area



Source: Caltrans

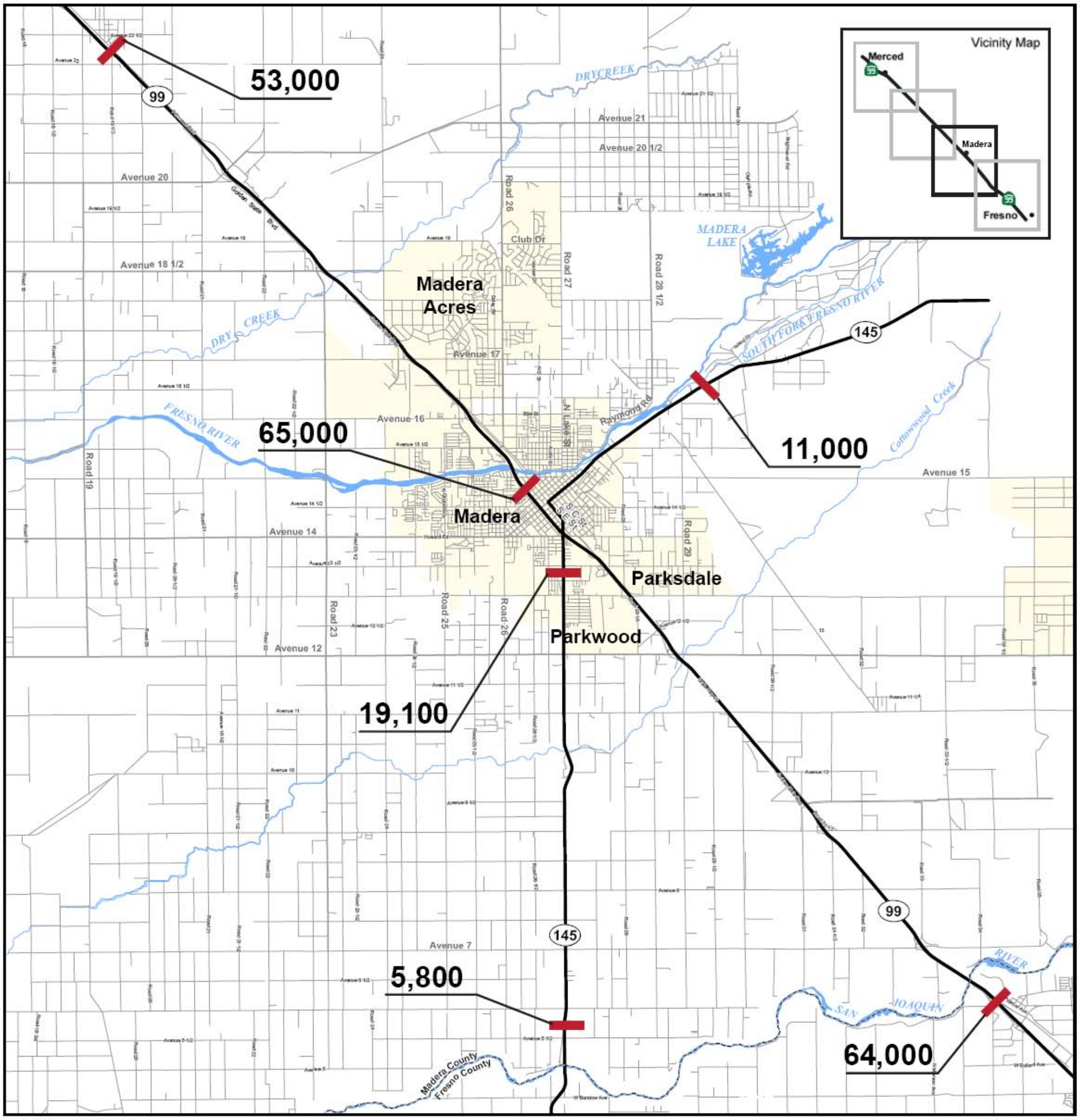
N

NOT TO SCALE

Major Roadways

3,600 Average Daily Traffic volume (2008)

Figure 4.2-1 (b)
Existing Major State Routes and Volumes – Chowchilla Area



Source: Caltrans

February 4, 2010

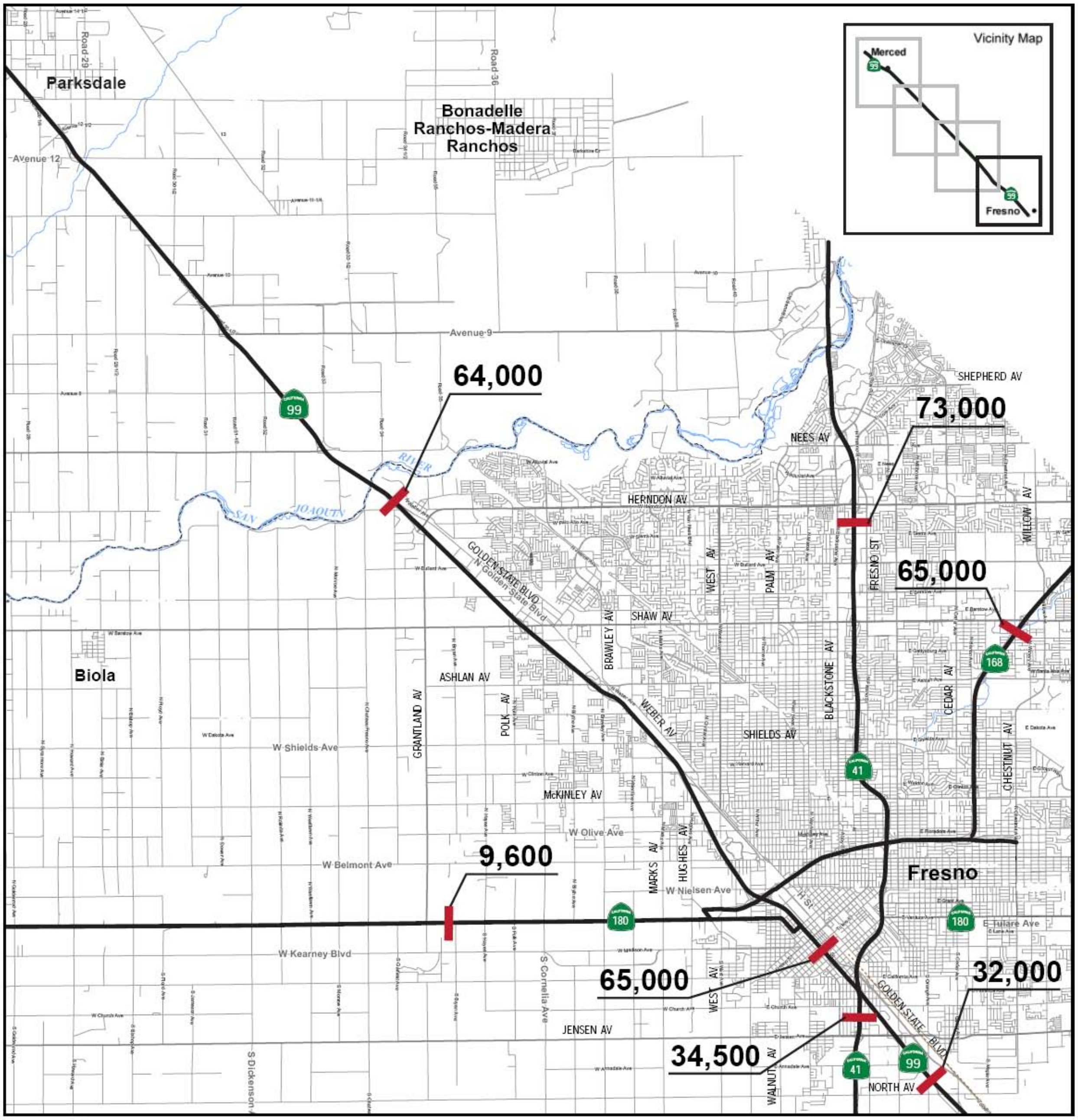
N

NOT TO SCALE

Major Roadways

5,800 Average Daily Traffic volume (2008)

Figure 4.2-1 (c)
Existing Major State Routes and Volumes – Madera Area



Source: Caltrans

Figure 4.2-1 (d)
Existing Major State Routes and Volumes – Fresno Area

SR 145 is a north-south highway extending between I-5 and SR 99 and continuing as an east-west highway to its intersection with SR 41. This route serves as an important linkage to both I-5 and SR 99 for farm-to-market shipping. It also provides secondary access to Yosemite National Park via SR 41. This route is a two- to four-lane facility within the study area. The ADT ranges between 5,800 and 19,100 vehicles in the Madera study area.

SR 152 is an east-west, primary access route between the central San Joaquin Valley and Monterey and Santa Clara counties. SR 152 serves as an important agricultural, commercial, and recreational access route. This is a four-lane divided expressway extending between the Merced County Line to the west and SR 99 to the east in the City of Chowchilla. The future extension of SR 152 includes an additional 15 miles of planned roadway between SR 99 and the unconstructed SR 65. The ADT ranges between 13,000 and 17,000 vehicles in the Chowchilla study area.

SR 180 is also known as the Sequoia-Kings County freeway. It is an east-west highway extending between Mendota and Kings Canyon National Park, travelling through Fresno County. The western end of SR 180 begins at Mendota, extends east through Kerman and Fresno, and eventually terminates at Kings Canyon National Park. The ADT is about 9,600 vehicles in the Fresno study area.

SR 233 is a north-south highway extending between SR 152 and SR 99. This route primarily serves as a connection between SR 152 and SR 99 and also provides local access to Chowchilla. SR 233 is a two- to four-lane highway. The ADT ranges between 3,600 and 11,000 vehicles in the Chowchilla study area.

4.2.2 Regionally Significant Roadways

MCAG, the Madera County Transportation Commission, and the Fresno COG have developed a "Regionally Significant Road System" based on the Federal Highway Administration (FHWA) Functional Classification System of Streets and Highways (FHWA 1989). Figures 4.2-2(a) through 4.2-2(d) identify all the regionally significant roads within the study area.

4.2.3 Regional Truck Routes

The Federal Surface Transportation Assistance Act (STAA) of 1982 defined a system to describe truck routes. The STAA truck routes within the study area include national network and terminal access routes, as follows:

- National Network (Federal) – The national network truck routes are federal highways. SR 99 is the only national network truck route within the study area.
- Terminal Access (State, Local) – The terminal access routes are portions of state routes or local roads that can accommodate trucks. Within the study area, terminal access routes include SR 41, SR 59, SR 140, SR 145, SR 152, and SR 233.

Figures 4.2-3(a) through 4.2-3(d) present the designated truck routes and total truck volumes on the designated truck routes in the study area. Similar to the roadway volumes, the truck volumes are also expressed as the average annual daily truck volume, which is total truck volume averaged over a 365-day year. The total truck volume includes the number of trucks with two or more axles. The total truck volumes expressed as a percentage of the total average annual daily traffic (AADT) volumes are also presented on these figures.

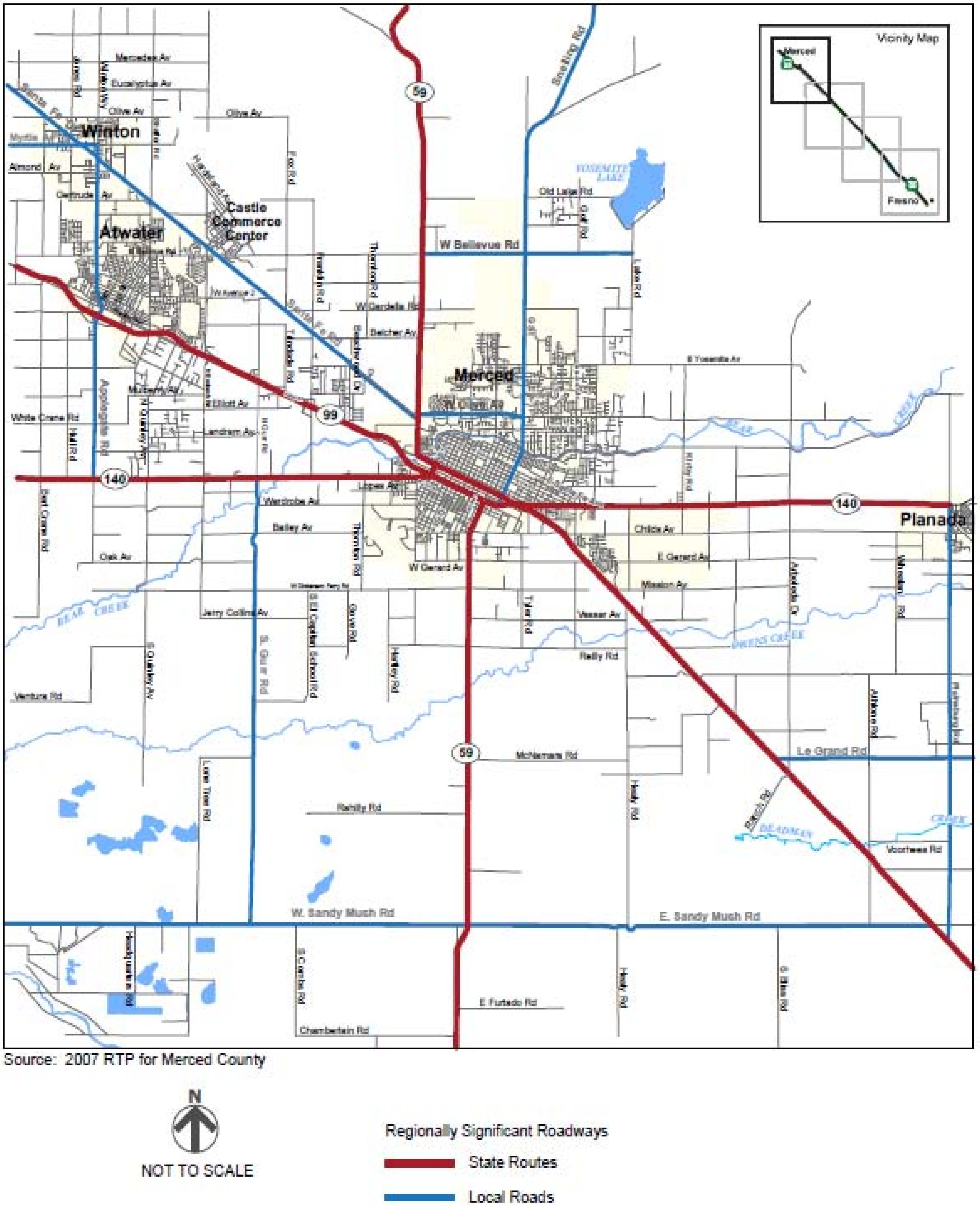
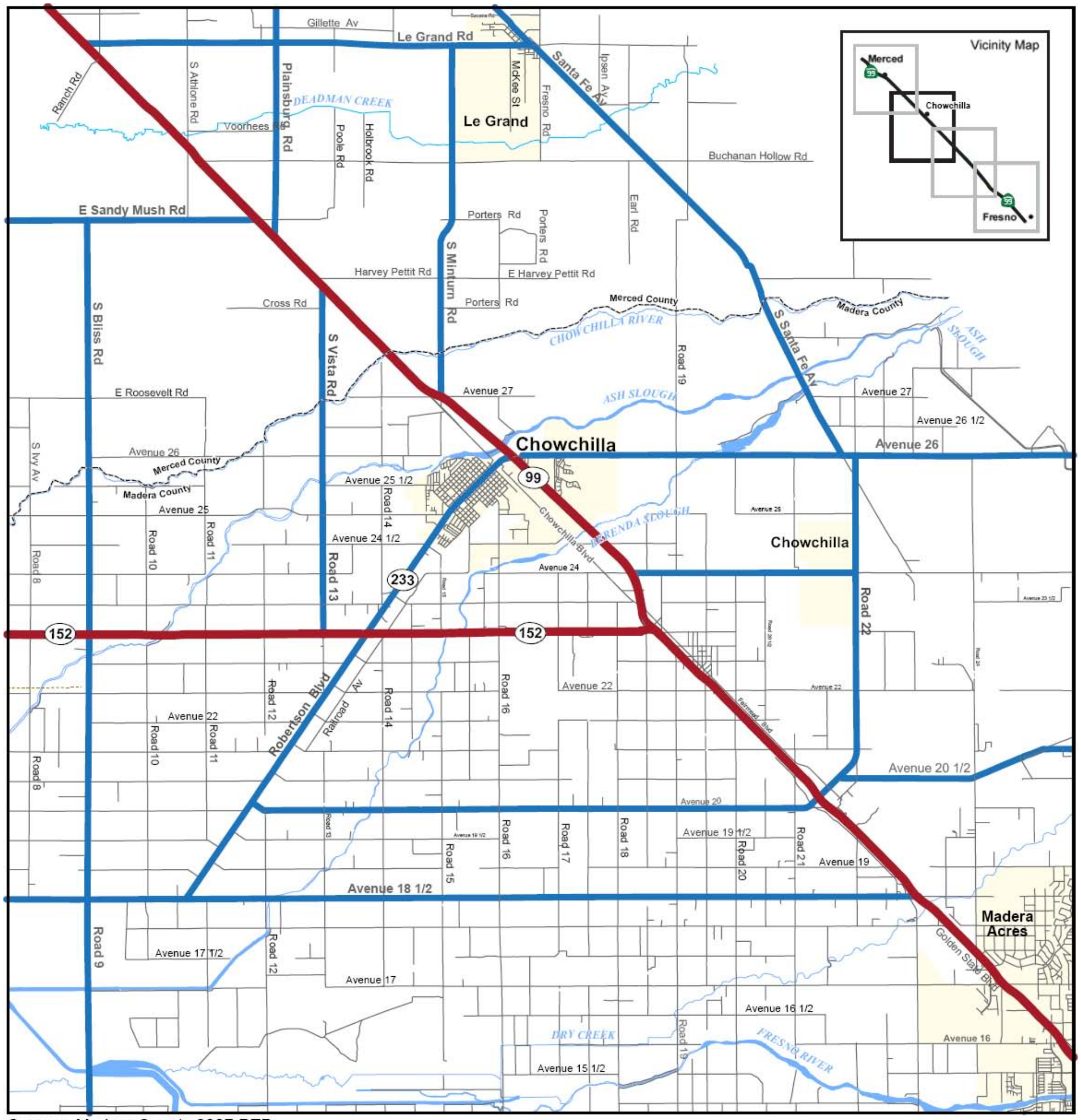


Figure 4.2-2 (a)
Regionally Significant Roadways – Merced Area



Source: Madera County 2007 RTP

NOT TO SCALE

Regionally Significant Roadways

State Routes

Local Roads

Figure 4.2-2 (b)
Regionally Significant Roadways – Chowchilla Area

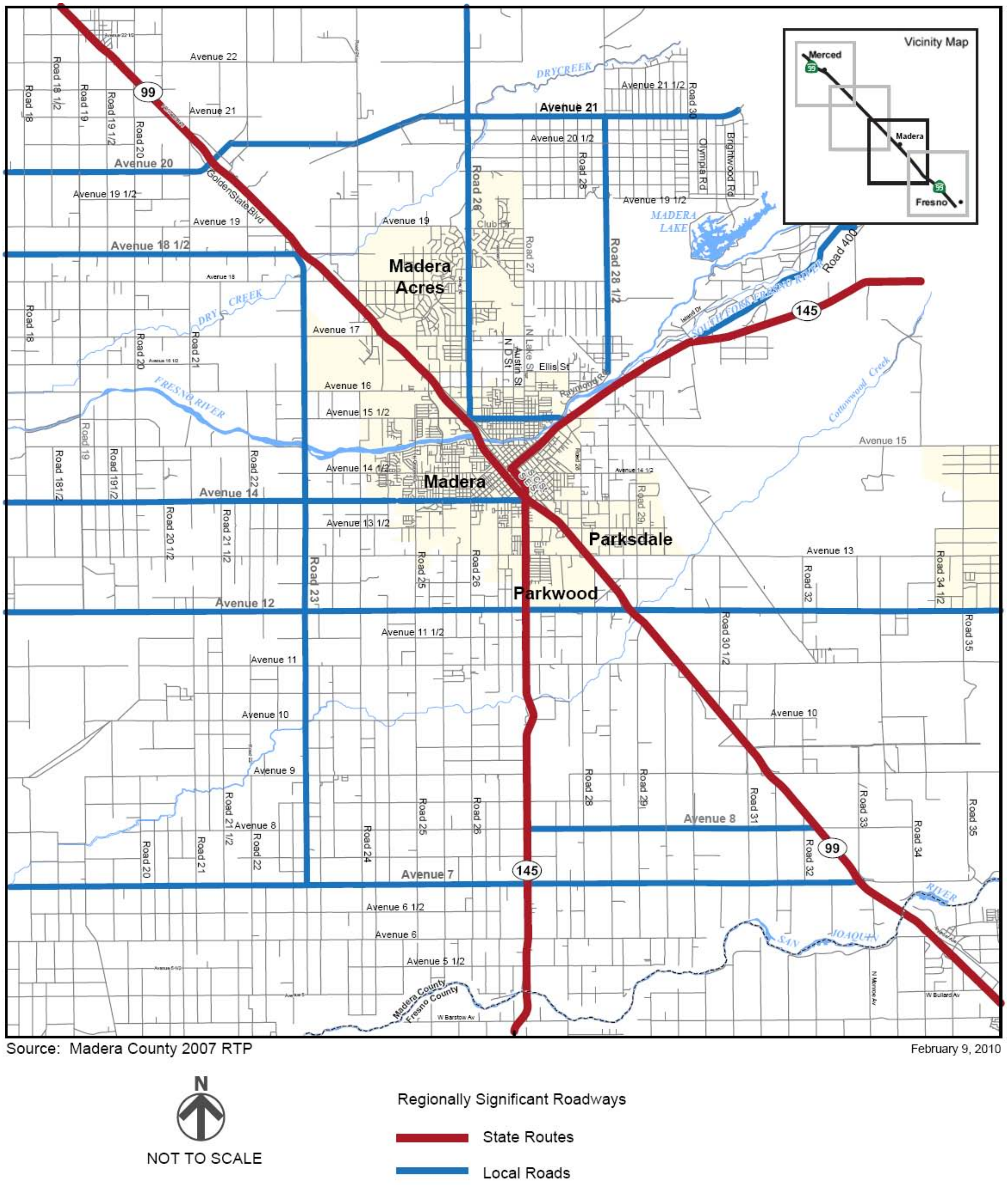
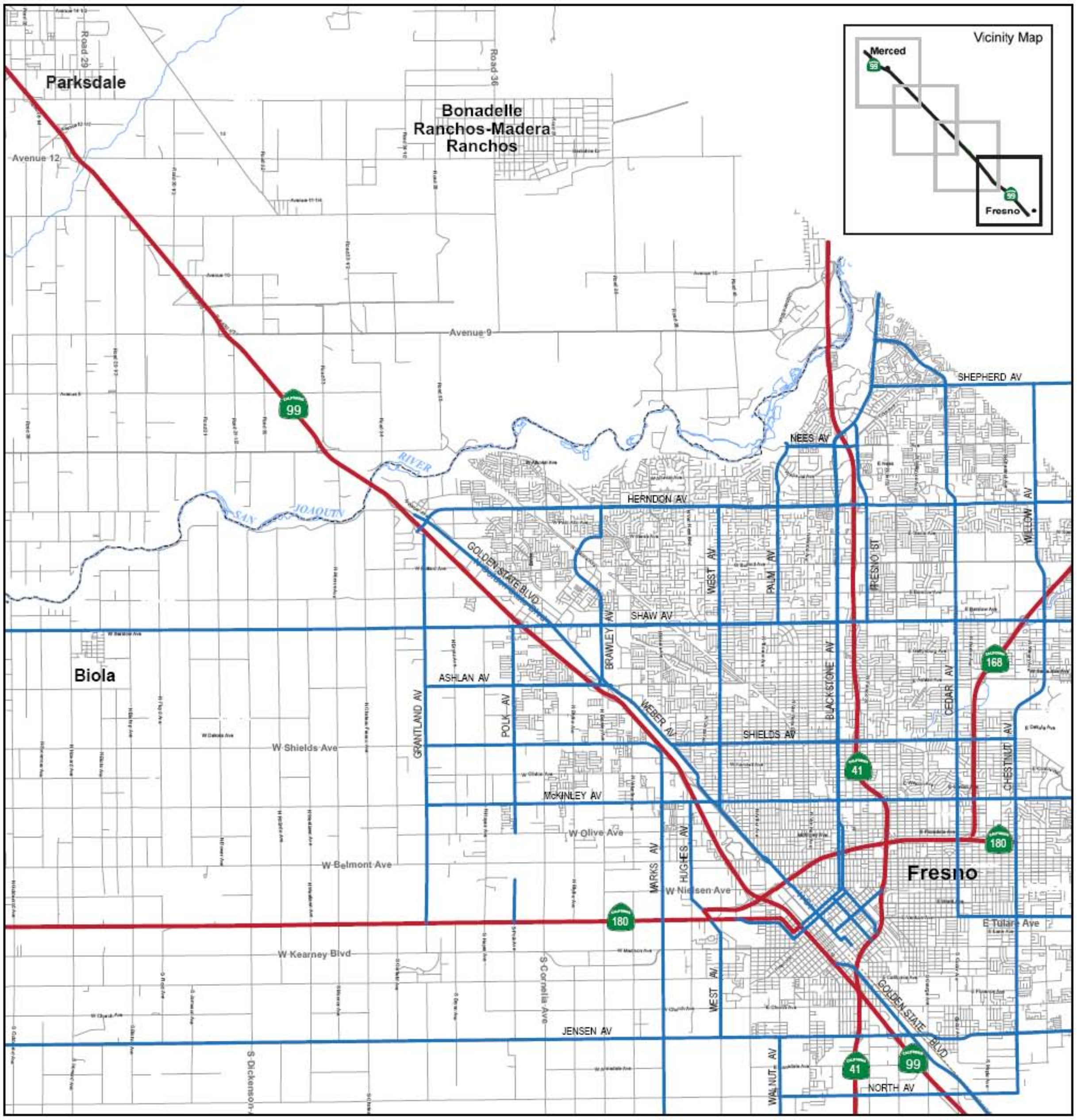


Figure 4.2-2 (c)
Regionally Significant Roadways – Madera Area



Source: 2007 RTP, Council of Fresno Governments

N

NOT TO SCALE

Regionally Significant Roadways

State Routes

Local Roads

Figure 4.2-2 (d)
Regionally Significant Roadways –
Fresno Area

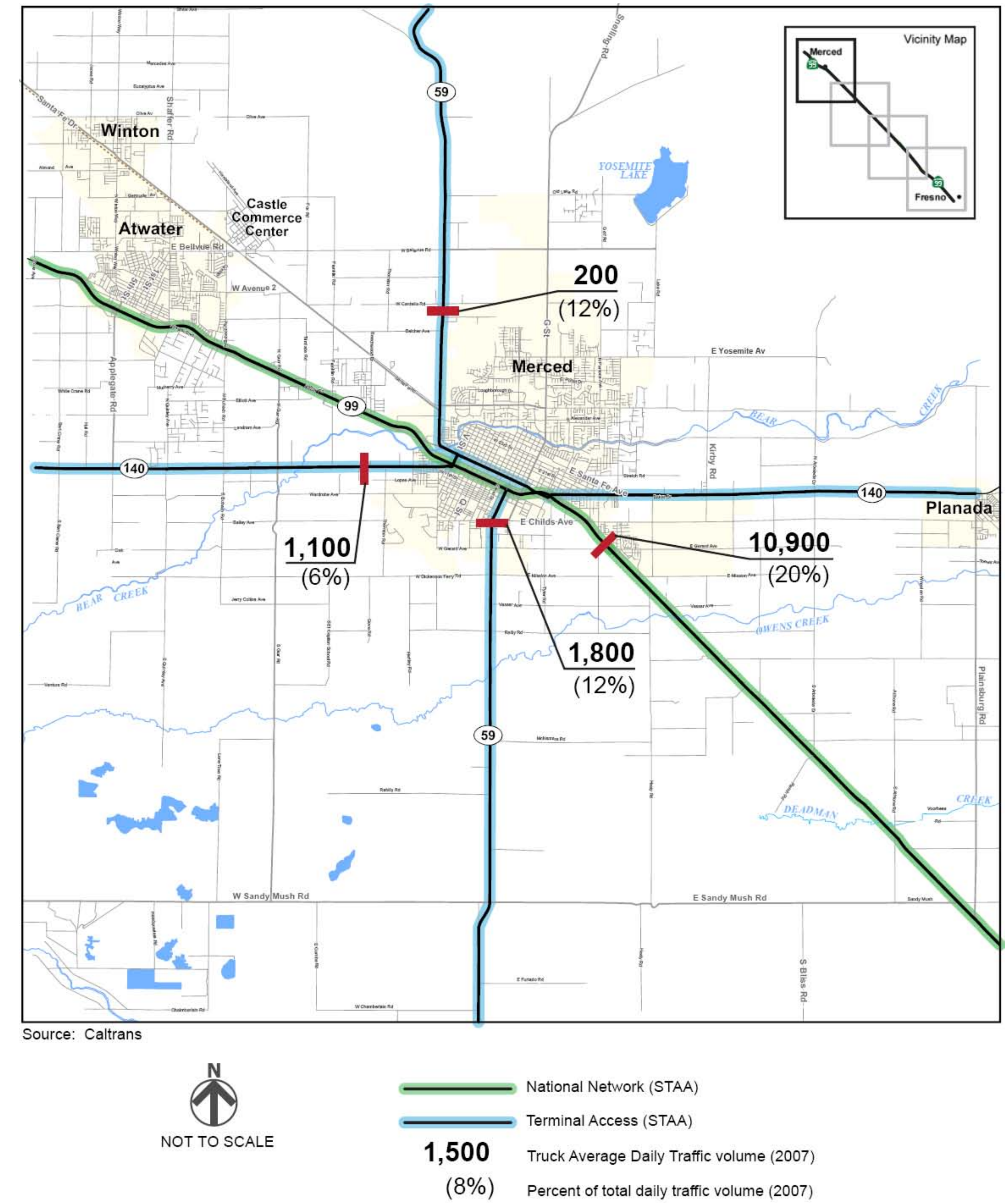
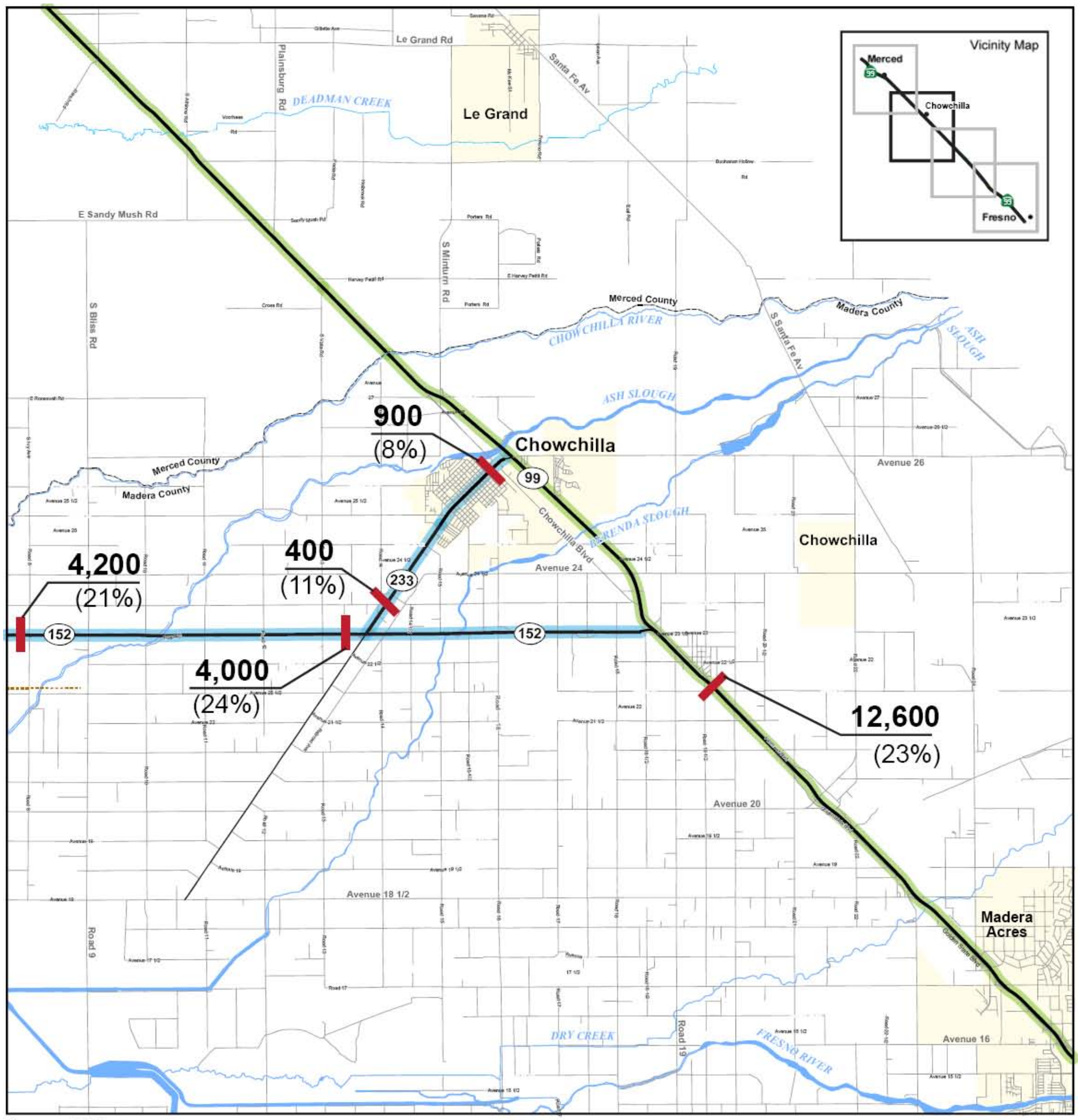


Figure 4.2-3 (a)
Existing Truck Routes and Volumes – Merced Area



Source: Caltrans

National Network (STAA)

Terminal Access (STAA)

3,600 Truck Average Daily Traffic volume (2007)

(23%) Percent of total average daily traffic volume (2007)

Figure 4.2-3 (b)
Existing Truck Routes and Volumes –
Chowchilla Area

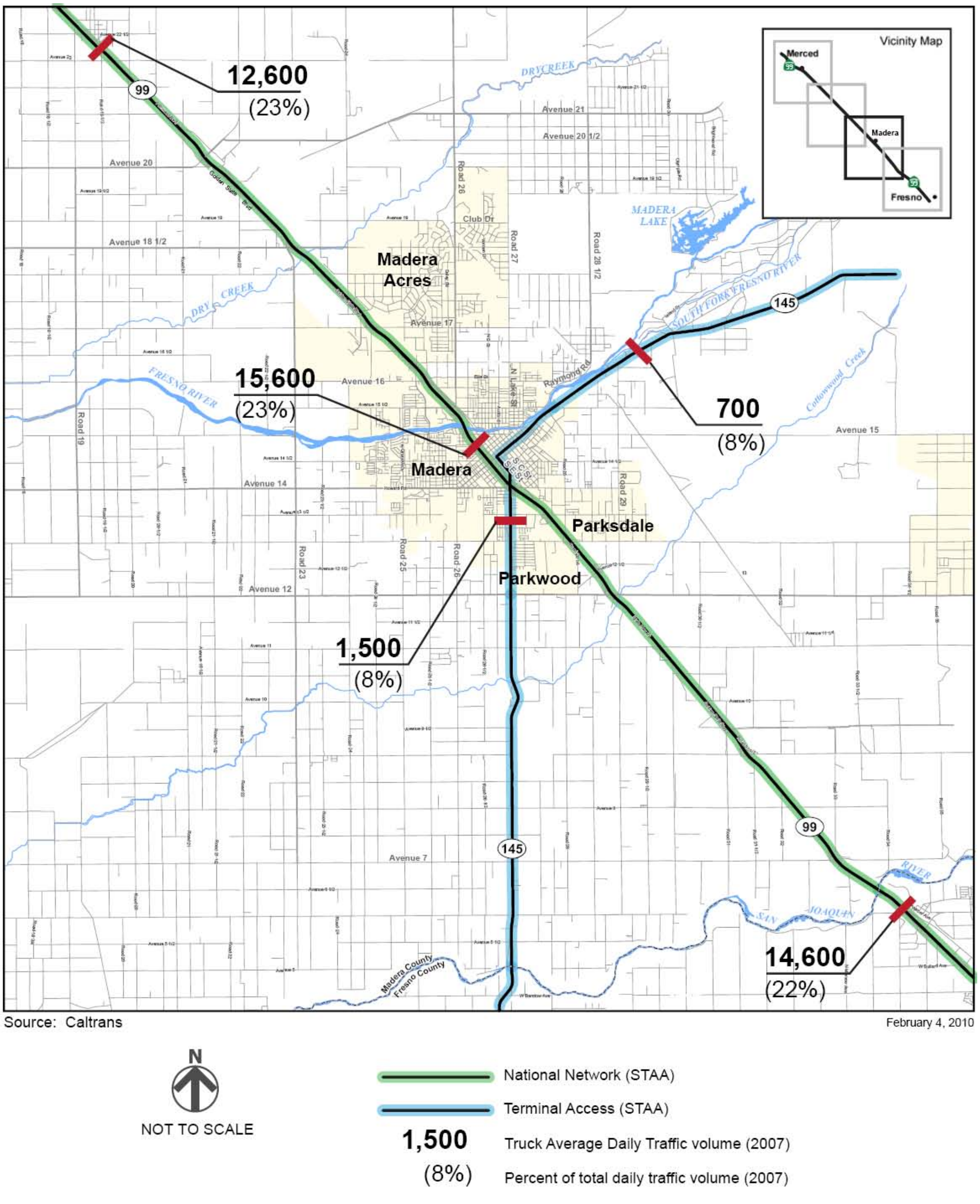


Figure 4.2-3(c)
Existing Truck Routes and Volumes – Madera Area

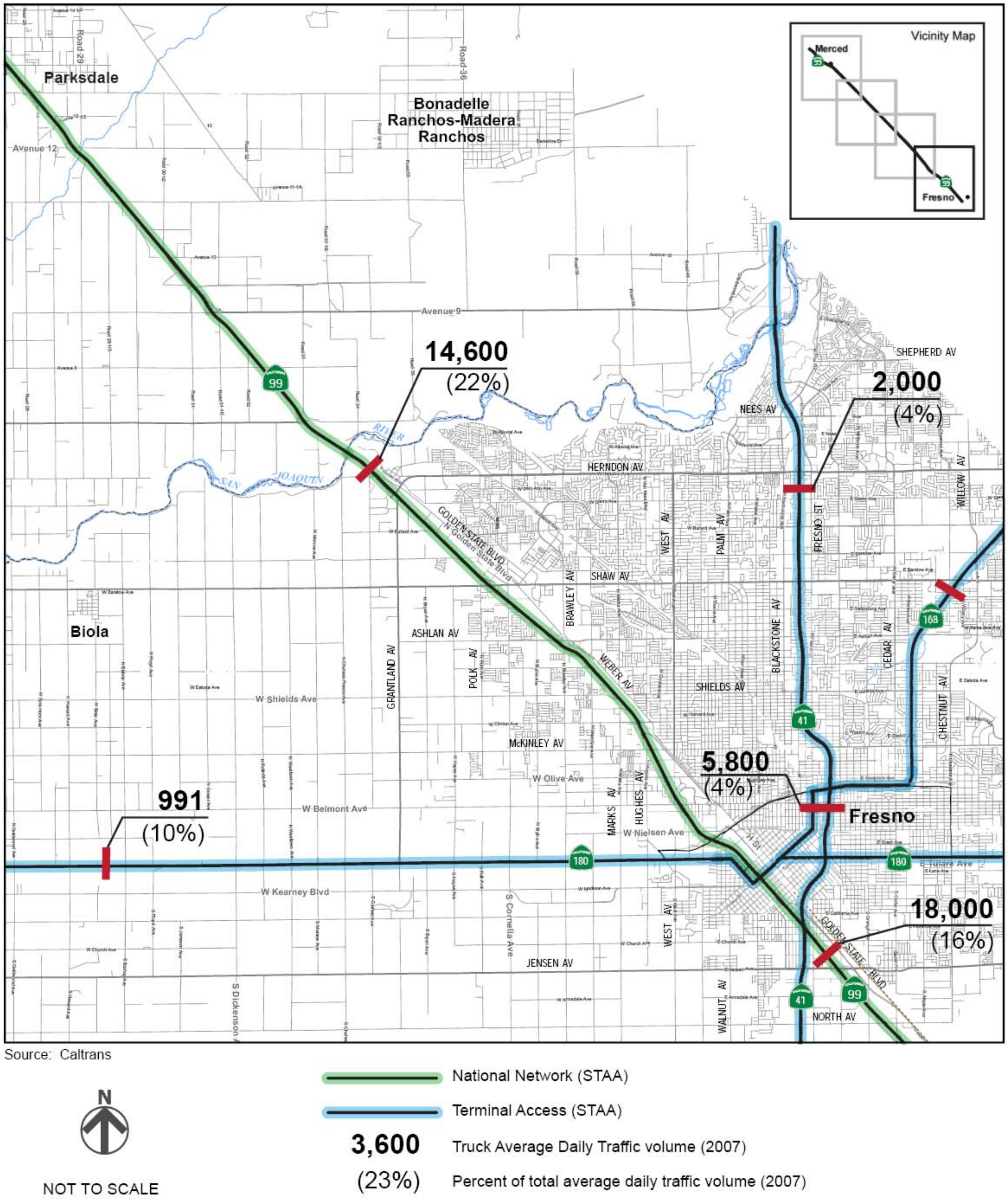


Figure 4.2-3(d)
Existing Truck Routes and Volumes – Fresno Area

4.3 Corridor Traffic Volumes

4.3.1 Major Roadway Traffic Volumes

The 24-hour volume at a given location averaged over a 365-day year is expressed as AADT. AADT volumes for SR 99, SR 41, SR 59, SR 140, SR 145, SR 152, and SR 233 within the study area were obtained from Caltrans and are presented in Figure 4.2-1(a) to Figure 4.2-1(d). Selected locations along the freeways were identified and the corresponding 2008 volumes are shown. These numbers represent the total volume across all lanes in both directions.

4.3.2 Roadway and Intersection Operations along Alternatives

An analysis of existing daily operating conditions was conducted for roadways along the UPRR/SR 99, BSNF, Hybrid, and HST wye alternatives that intersect a number of regionally significant and other local roadways. The purpose of conducting the roadway segment analysis is to determine the current adequacy of the roadways and to provide a baseline for future comparison of the roadway segments that may be affected by the project alignment.

The 24-hour count at any specified location is expressed as ADT. Because no traffic volume data were available on the roadway segments, counts were conducted for traffic analysis at the selected locations. Daily volumes for roadway segments were collected on 2 days in May 2010. This section provides analysis for the roadways along UPRR/SR 99, BNSF, Hybrid, and wye alternatives.

Table 4.3-1 presents the roadways, location of traffic counts, and the number of lanes on the roadway. This table also presents roadway segment LOS for AM and PM peak hours and the LOS standards identified for each location. Roadways 1 through 29 are located in Merced County and Roadways 30 through 50 are located in Madera County. For roadway segments in Merced County, analysis was performed based on the V/C ratio criteria presented in Table 3.2-5. The Merced County RTP establishes a minimum LOS D standard for the analysis of the county's transportation system. As indicated in Table 3.2-3, maximum capacity to achieve LOS D on a two-lane roadway is 1,700 vehicles per hour (both directions). This capacity was used to calculate the volume to capacity ratio for roadways in Merced County.

Similarly, for roadways located in Madera County, analysis was performed based on the volume to capacity ratio criteria presented in Table 3.2-5. The Madera County RTP establishes a minimum LOS D standard for the analysis of the county's transportation system (local streets and roads). As indicated in Table 3.2-4, per Madera County General Plan guidelines, maximum capacity to achieve LOS D for a collector is 450 vehicles per hour per lane. For an arterial, the maximum capacity is 675 vehicles per hour per lane. Per the Madera County General Plan, the analysis roadway segments on Road 22/Avenue 20, Avenue 12, Avenue 9, and Avenue 7 are classified as arterials. Because the roadway type for the other selected segments along the alignment was not known, a conservative analysis was performed assuming that all the roadways are collectors.

The results of the analysis for all the roadways are presented in Table 4.3-1. As indicated in the table, all the roadway segments operate at an acceptable LOS (LOS D or better) under existing conditions.

Table 4.3-1
Roadway Operating Conditions along Alternatives

No.[a]	Roadway	Count Location	Lanes	LOS Standard[b]	AM Peak Hour			PM Peak Hour		
					Vol[c]	V/C[d]	LOS	Vol[c]	V/C[d]	LOS
1	Buhach Road/ Airdrome Entry	Just South of Santa Fe Dr	2	D	326	0.19	A	374	0.22	A
2	E Bellevue Road	Between Buhach Rd and Santa Fe Dr	2	D	445	0.26	A	680	0.40	A
3	W Avenue 2	West of Santa Fe Dr	2	D	502	0.30	A	491	0.29	A
4	Belcher Avenue	West of Franklin Rd	2	D	124	0.07	A	97	0.06	A
5	Gerard Avenue	East of SR 99	2	D	42	0.02	A	35	0.02	A
6	Gerard Avenue	West of SR 99	2	D	403	0.24	A	350	0.21	A
7	E Mission Avenue	West of RR	2	D	257	0.15	A	244	0.14	A
8	Healy Road	West of RR	2	D	11	0.01	A	8	0.00	A
9	Lingard Road	West of RR	2	D	27	0.02	A	32	0.02	A
10	Le Grand Road	East of RR (between SR 99 and Arboleda)	2	D	131	0.08	A	130	0.08	A
11	Ranch Road	West of RR (near Arboleda/Ranch Road)	2	D	5	0.00	A	9	0.01	A
12	Athlone Road	Between Sandy Mush Rd and Le Grand Rd	2	D	34	0.02	A	37	0.02	A
13	Sandy Mush Road	Between Plainsburg Rd (east of SR 99) and Athlone Rd (west of SR 99)	2	D	44	0.03	A	44	0.03	A
14	Avenue 27	West of RR (between Rd 14 and SR 99)	2	D	39	0.02	A	52	0.03	A
15	S Orchard Drive	North of Mission Ave	2	D	15	0.01	A	17	0.01	A
16	S Arboleda Drive	North of Mission Ave	2	D	144	0.08	A	168	0.10	A
17	S Arboleda Drive	South of Mariposa Way	2	D	98	0.06	A	113	0.07	A
18	Whealan Road	North of Mission Ave	2	D	3	0.00	A	28	0.02	A
19	Whealan Road	South of Mariposa Way	2	D	16	0.01	A	23	0.01	A
20	Plainsburg Road	North of Mission Ave	2	D	95	0.06	A	115	0.07	A
21	Plainsburg Road	South of Mariposa Way	2	D	109	0.06	A	140	0.08	A
22	Burchell Avenue	South of Mariposa Way	2	D	61	0.04	A	55	0.03	A
23	Savana Road	West of Santa Fe Dr	2	D	23	0.01	A	31	0.02	A
24	S Cunningham Road	East/North of Santa Fe Dr	2	D	75	0.04	A	80	0.05	A
25	Le Grand Road	East of Santa Fe Dr	2	D	111	0.07	A	117	0.07	A
26	Fresno Road	North of Santa Fe Dr	2	D	8	0.00	A	5	0.00	A
27	S Ispen Avenue	Between Santa Fe Dr and Le Grand Rd	2	D	7	0.00	A	7	0.00	A
28	Buchanan Hollow Road	West of Santa Fe Dr	2	D	22	0.01	A	15	0.01	A
29	White Rock Road	North or South of Santa Fe Dr	2	D	18	0.01	A	36	0.02	A

No.[a]	Roadway	Count Location	Lanes	LOS Standard[b]	AM Peak Hour			PM Peak Hour		
					Vol[c]	V/C[d]	LOS	Vol[c]	V/C[d]	LOS
30	Ave 26	West of Santa Fe Dr	2	D	81	0.09	A	101	0.11	A
31	Road 22	North/East of Santa Fe Dr	2	D	74	0.08	A	83	0.09	A
32	Ave 24	West of Santa Fe Dr	2	D	59	0.07	A	77	0.09	A
33	Road 24	North of Avenue 21	2	D	96	0.11	A	73	0.08	A
34	Road 22 - Ave 20 [e]	North of Ave 20 1/2	2	D	416	0.31	A	375	0.28	A
35	Ave 20½	West of Santa Fe Dr	2	D	98	0.11	A	108	0.12	A
36	Raymond Road/Road 28½	North/East of Santa Fe Dr	2	D	355	0.39	A	420	0.47	A
37	Ave 15½	West of Santa Fe Dr	2	D	147	0.16	A	161	0.18	A
38	Ave 15	West of Santa Fe Dr	2	D	86	0.10	A	127	0.14	A
39	Ave 12 [e]	East of Rd 30 1/2 (bet SR 99 and Santa Fe Rd)	2	D	790	0.59	A	908	0.67	B
40	Ave 11	East of SR 99 and Rd 30 1/2	2	D	22	0.02	A	25	0.03	A
41	Ave 10	East of SR 99 and Rd 30 1/2	2	D	19	0.02	A	11	0.01	A
42	Ave 9 [e]	East of SR 99 and Rd 30 1/2	2	D	449	0.33	A	290	0.21	A
43	Road 31	Near Avenue 10, north of SR 99 and Rd 30 1/2	2	D	5	0.01	A	6	0.01	A
44	Ave 8	East of SR 99	2	D	18	0.02	A	11	0.01	A
45	Ave 7 [e]	Between SR 99 and Rd 33	2	D	216	0.16	A	246	0.18	A
46	Road 33	South of Avenue 7 (east of SR 99)	2	D	4	0.00	A	1	0.00	A
47	Road 19	South of Avenue 21 1/2	2	D	40	0.04	A	36	0.04	A
48	Road 18½	South of Avenue 21 1/2	2	D	3	0.00	A	2	0.00	A
49	Road 16	North of Avenue 21	2	D	47	0.05	A	62	0.07	A
50	Road 14	North of Avenue 21	2	D	22	0.02	A	27	0.03	A

[a] Roadways 1 through 29 are in Merced County and 30 through 50 are in Madera County.

[b] LOS Standard per Merced and Madera County guidelines.

[c] Vol = Existing Volume; two-way peak-hour volume is presented.

[d] V/C ratio; capacity for all roadways in Merced County is assumed for two-lane roadway (two-way capacity of 1,700 veh/hr); and capacity for all roadways in Madera County is assumed for two-lane collector (450 vehicles per hour per lane) except for roadways noted in Note [e].

[e] Roadway segment classified as an arterial (capacity of 675 vehicles per hour per lane for LOS D) – i.e., roadway segments 34, 39, 42, and 45.

RR = Railroad

4.3.3 Fresno Analysis between Herndon Avenue and Shaw Avenue

In Fresno County, the proposed at-grade HST alignment between Herndon and Shaw Avenues would affect traffic circulation in this area. To assess the effect of the project, intersection and roadway analysis was performed for existing conditions in the vicinity of the proposed HST alignment.

Roadway segments on Golden State Boulevard, Bullard Avenue, Gates Avenue, and Shaw Avenue were analyzed. The following intersections were analyzed, as shown in Figure 4.3-1.

1) Golden State Boulevard / Santa Ana Avenue
2) Cornelia Avenue / Santa Ana Avenue
3) Cornelia Avenue / Shaw Avenue
4) Golden State Boulevard / Shaw Avenue
5) Blythe Avenue / Shaw Avenue
6) Brawley Avenue / Shaw Avenue
7) Cornelia Avenue / Golden State Boulevard
8) Figarden Drive / Gates Avenue
9) Figarden Drive / Bullard Avenue
10) Dante Avenue / Bullard Avenue
11) Polk Avenue / Bullard Avenue
12) Carnegie Avenue / Bullard Avenue
13) Golden State Boulevard / Carnegie Avenue

4.3.3.1 Roadway Analysis

Roadway segment analysis was performed on Golden State Boulevard (north of Carnegie Avenue), Bullard Avenue (between Polk and Dante Avenues), Gates Avenue (between Figarden Drive and Shaw Avenue), and Shaw Avenue (between Brawley Avenue and Golden State Boulevard) to capture the effects on traffic circulation in the vicinity of the proposed HST alignment.

ADT volume was collected on the analysis segments in March 2011. LOS was calculated based on the capacities presented in the Florida Tables. Table 4.3-2 presents the ADT, roadway conditions, and LOS on the roadway segments. ADT counts are presented in Appendix B and LOS calculations are presented in Appendix C.

Table 4.3-2
Existing Roadway Segment Analysis – Fresno Area Between Herndon and Shaw Avenues

No.	Roadway Segment	ADT	Number of Lanes (N/E or S/W)	Divided/ Undivided	LOS
1	Golden State Blvd (North of Carnegie Ave)	3,614	1/1	Undivided	A
2	Bullard Ave (North of Dante Ave)	7,238	2/2	Divided	A
3	Gates Ave (between Figarden Dr and Shaw Ave)	11,790	2/2	Undivided	A
4	Shaw Ave (between Golden State Blvd and Brawley Ave)	29,871	3/2	Divided	D

As indicated in Table 4.3-2, all the analysis segments operate at LOS D or better under existing conditions.

4.3.3.2 Intersection Analysis

A total of 13 intersections were identified for analysis under existing conditions in the vicinity of the proposed HST alignment as shown in Figure 4.3-1. Two additional intersections identified on this figure as future signalized study intersections (Intersections 14 and 15) are analyzed only under future year (2035) conditions.

Intersection turning movement volumes were collected at all the study locations in March 2011. Figure 4.3-2 presents existing geometry and Figure 4.3-3 presents AM and PM peak hour volumes at the study intersections. Based on the existing geometry and volumes, intersection analysis was performed for both the peak hours. The results of the analysis are presented in Table 4.3-3. Intersection turning movement counts are presented in Appendix B and LOS calculation sheets are presented in Appendix C.

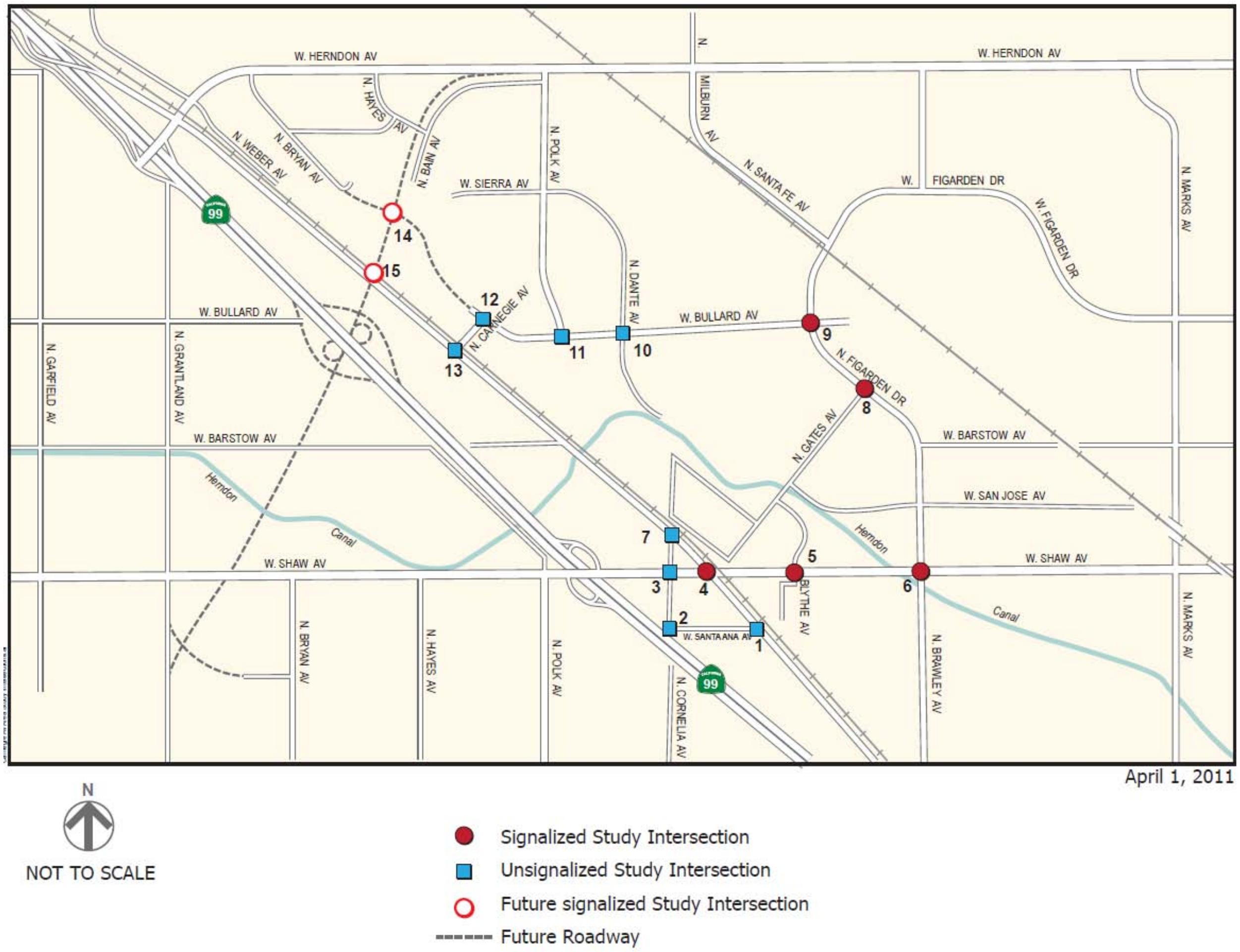


Figure 4.3-1
Study Intersections – Fresno Area between
Herndon and Shaw Avenues

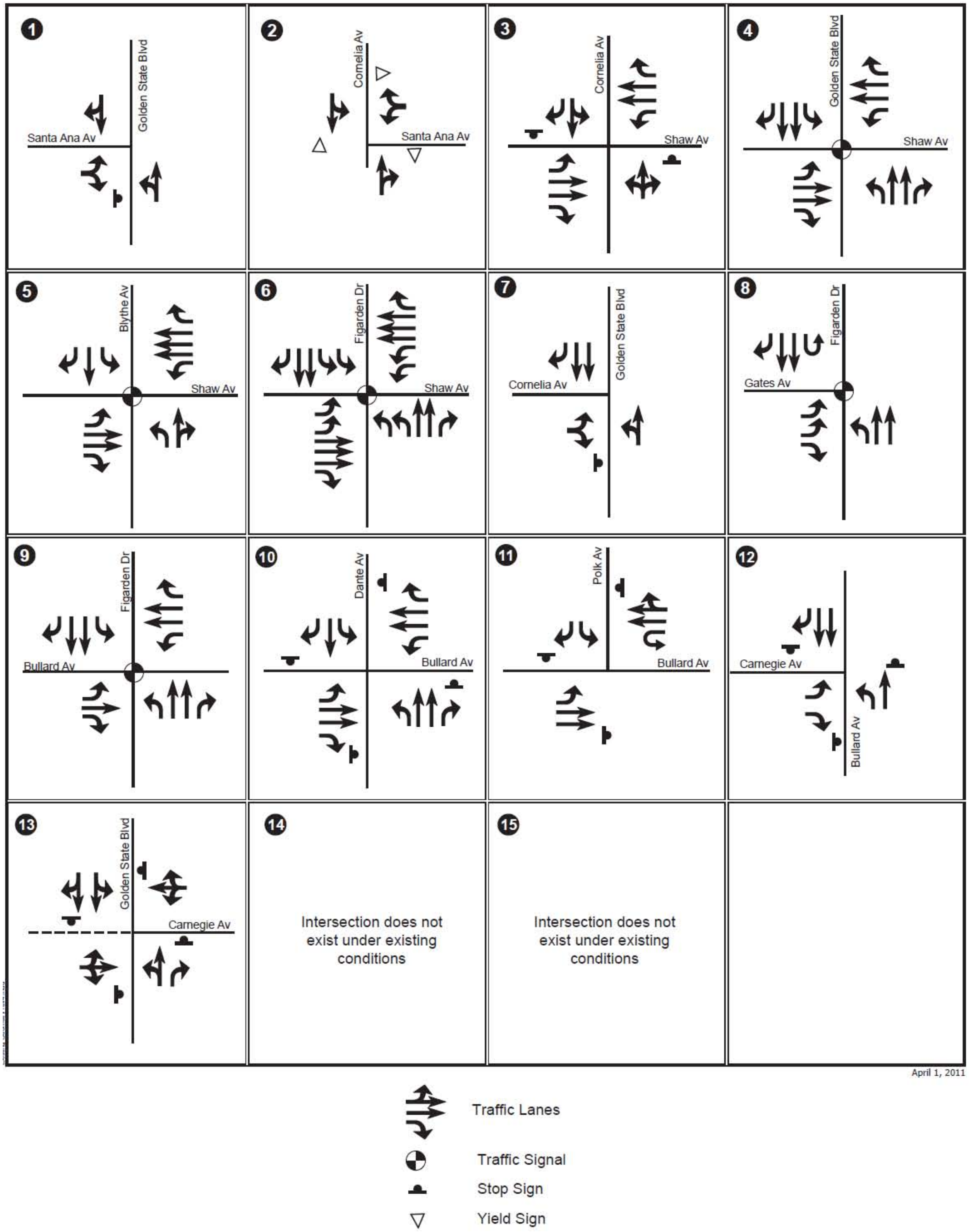


Figure 4.3-2
Existing Intersection Geometry – Fresno Area between Herndon and Shaw Avenues

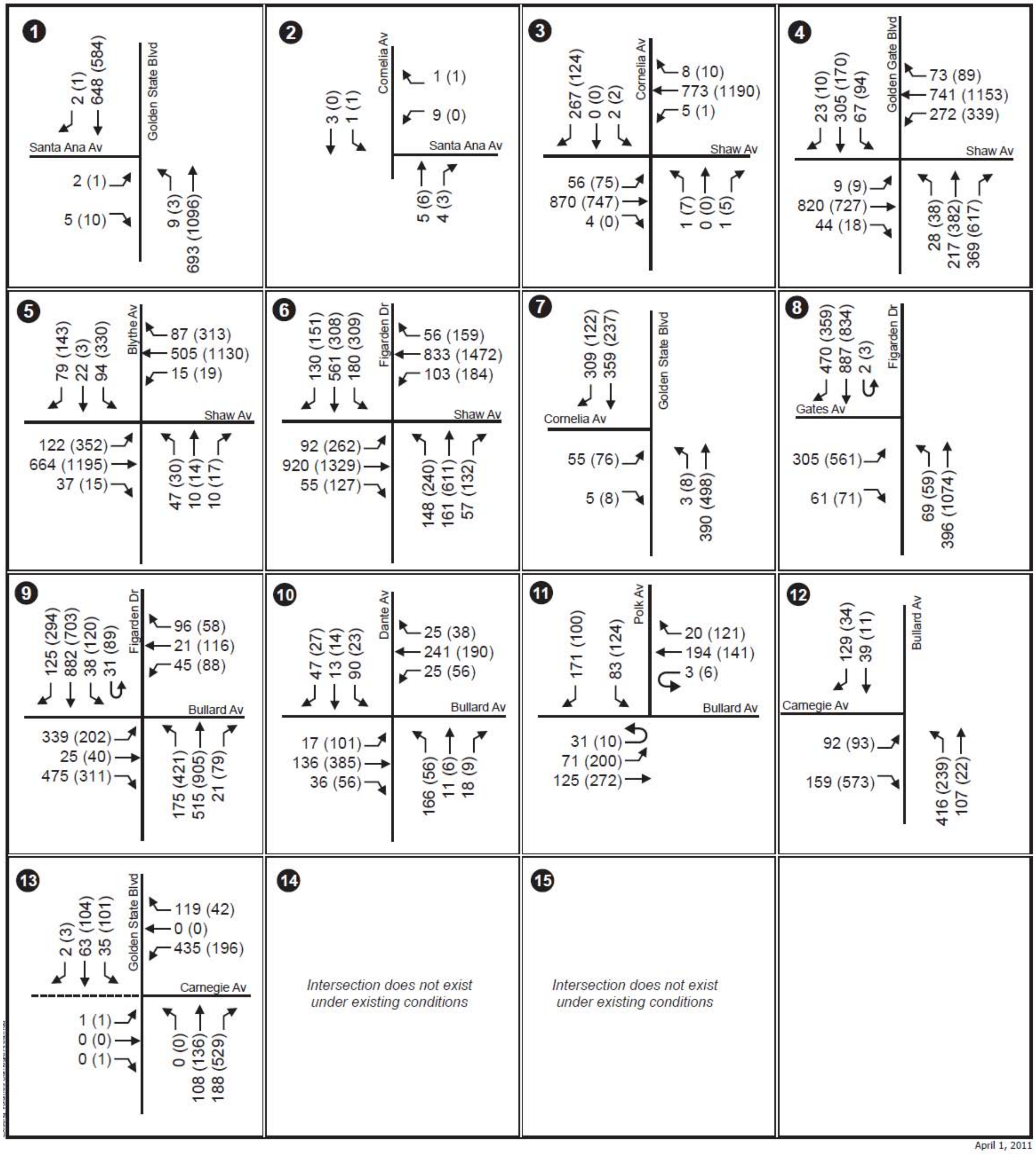


Figure 4.3-3
Existing Intersection Volumes – Fresno Area between Herndon and Shaw Avenues

Table 4.3-3
Existing Intersection Operating Conditions – Fresno Area between Herndon and Shaw Avenues

	Intersection	Intersection Control	AM Peak Hour		PM Peak Hour	
			LOS	Delay (sec)	LOS	Delay (sec)
1	Golden State Blvd/Santa Ana Ave	Unsignalized[a]	C	18.8	C	16.2
2	Cornelia Ave/Santa Ana Ave	Unsignalized[a]	A	7.0	A	6.8
3	Cornelia Ave/Shaw Ave	Unsignalized[a]	E	36.4	E	44.9
4	Golden State Blvd/Shaw Ave	Signalized	D	43.8	E	76.9
5	Blythe Ave/Shaw Ave	Signalized	D	36.4	F	>80
6	Brawley Ave/Shaw Ave	Signalized	D	38.9	E	64.5
7	Cornelia Ave/Golden State Blvd	Unsignalized[a]	C	18.5	D	30.9
8	Figarden Dr/Gates Ave	Signalized	B	15.8	C	21.2
9	Figarden Dr/Bullard Ave	Signalized	D	45.6	D	43.0
10	Dante Ave/Bullard Ave	Unsignalized[b]	B	10.9	B	10.6
11	Polk Ave/Bullard Ave	Unsignalized[b]	B	10.9	B	11.7
12	Carnegie Ave/Bullard Ave	Unsignalized[b]	C	16.8	C	21.7
13	Golden State Blvd/Carnegie Ave	Unsignalized[b]	E	45.7	C	23.3

Notes:
[a] One-way or two-way stop controlled intersection. LOS and delay reported for the worst movement.
[b] All-way stop controlled intersection, average delay reported.

As indicated in Table 4.3-3, all intersections operate at LOS D or better under existing conditions except intersections 3, 4, 5, 6, and 13, which operate at LOS E/F under AM and/or PM peak hours.

4.3.4 SR 99 Proposed Realignment in Fresno (Ashlan Avenue to Clinton Avenue)

In the Fresno area, along SR 99 from Ashlan Avenue to Clinton Avenue, the UPRR/SR 99, BNSF, and Hybrid HST alternatives follow an alignment located between the UPRR and SR 99. This alignment segment is shown in its regional setting in Figure 4.3-4.

A study area was defined to address potential freeway and local intersection impacts based on the anticipated traffic redistribution patterns due to the potential realignment of SR 99 and implementation of the HST alignment. The study area includes northbound and southbound freeway segments on SR 99 from Shaw Avenue to McKinley Avenue. The study freeway segments were selected to capture potential impacts of the mainline and ramp improvements with respect to the HST alignment. The study area with the proposed improvements is presented in Figure 4.3-5.

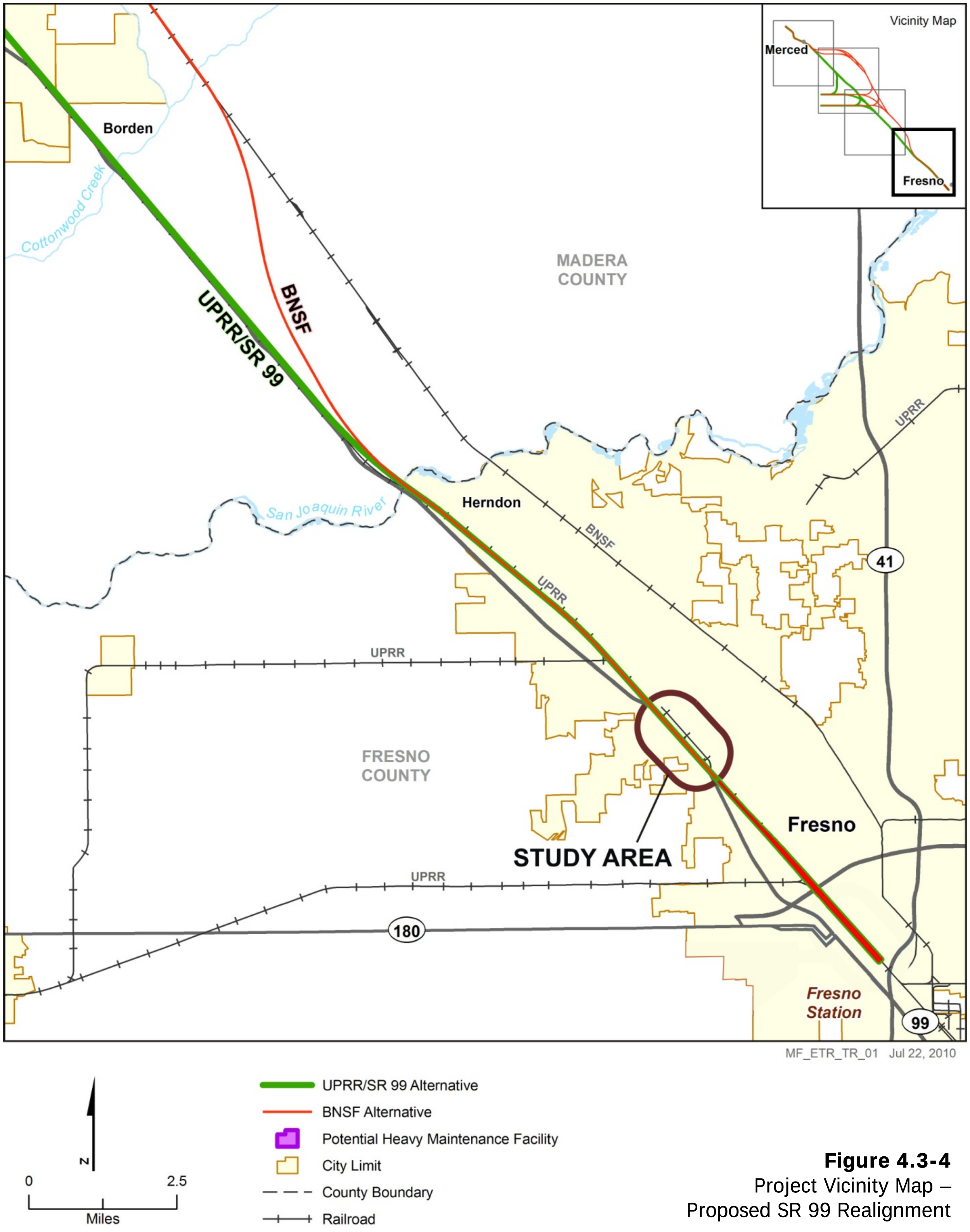


Figure 4.3-4
Project Vicinity Map –
Proposed SR 99 Realignment

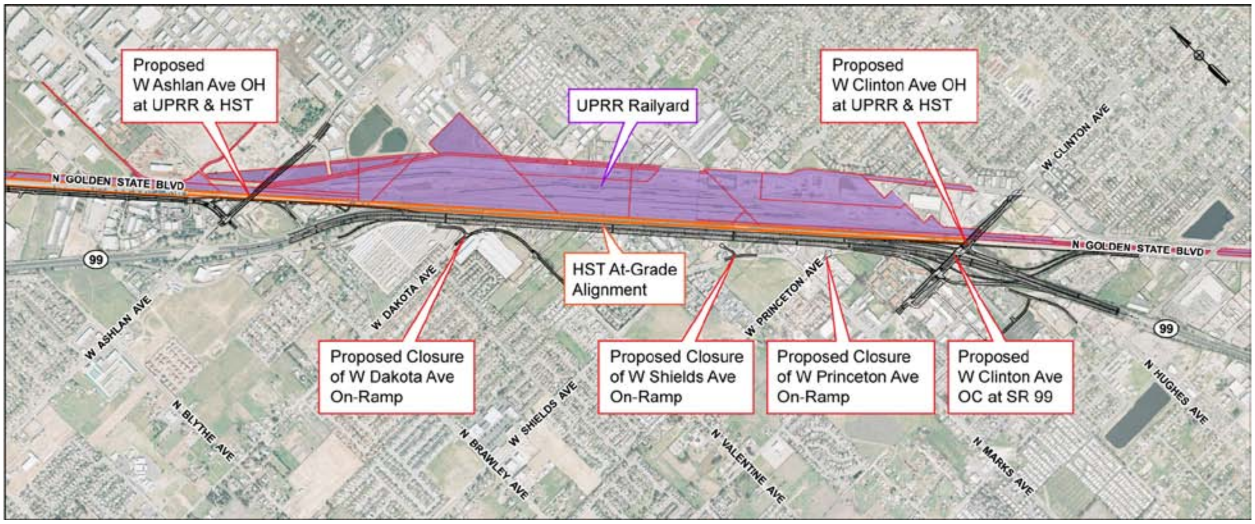


Figure 4.3-5
Proposed SR 99 Realignment
(Between W Ashlan Avenue and W Clinton Avenue)

Because of the proposed SR 99 realignment and ramp modifications, the following intersections were identified to capture the effects on traffic circulation in the vicinity of the realignment. Analysis intersection locations are identified below and shown in Figure 4.3-6.

1) McKinley Avenue and Woodson Avenue
2) McKinley Avenue and SR 99 Southbound On-ramp
3) McKinley Avenue and SR 99 Northbound Off-ramp
4) McKinley Avenue and Golden State Boulevard
5) Clinton Avenue and Brawley Avenue
6) Clinton Avenue and Marks Avenue
7) Clinton Avenue and Vassar Avenue
8) Clinton Avenue and SR 99 Southbound Ramps
9) Clinton Avenue and SR 99 Northbound Ramps
10) Clinton Avenue and Weber Avenue
11) SR 99 Southbound Ramps and Princeton Avenue
12) SR 99 Southbound Ramps and Shields Avenue
13) Shields Avenue and Valentine Avenue
14) Shields Avenue and Brawley Avenue
15) Dakota Avenue and Brawley Avenue
16) Ashlan Avenue and SR 99 Southbound Ramp/Parkway Drive
17) Ashlan Avenue and SR 99 Northbound Ramp/Brawley Avenue
18) Brawley Avenue and Golden State Boulevard

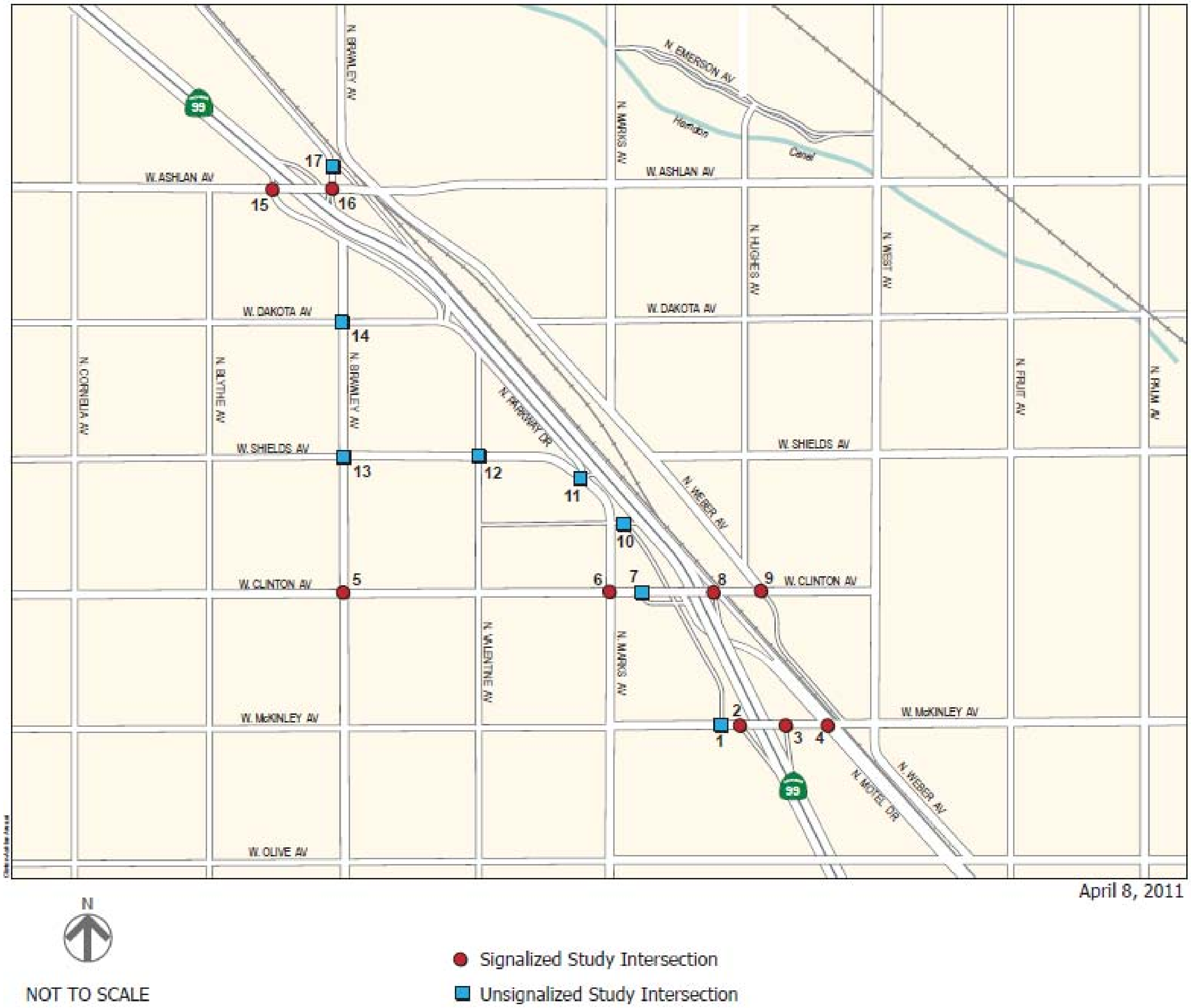


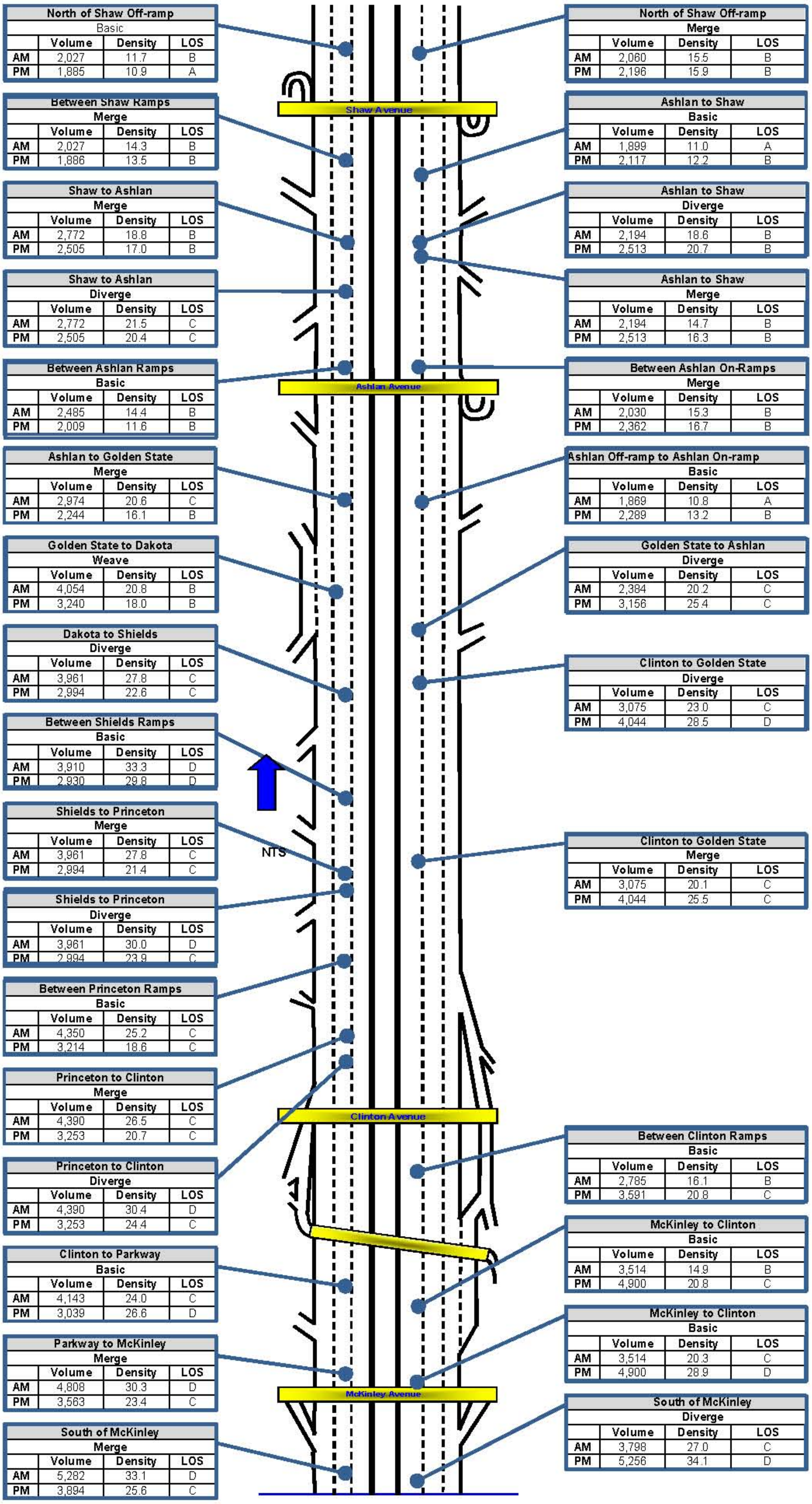
Figure 4.3-6
Study Intersections – Proposed SR 99 Realignment

4.3.4.1 SR 99 Freeway Segment Analysis

Traffic analysis for the freeway segments was based on the methodologies presented in the HCM. The basic analysis includes HCM assessments of LOS for the AM and PM peak hours using the HCM procedures for basic, merge, diverge, and weave sections. Figure 4.3-7 presents the summary of the freeway volume, density, and LOS along SR 99 for existing conditions. As shown in this figure, all the analysis freeway segments operate at LOS D or better under existing conditions.

4.3.4.2 Intersection Analysis

Existing intersection data were gathered at the study intersections from Caltrans intersection counts, transportation studies in the area, and new counts conducted in 2010 and 2011. Existing intersection geometry for all the study intersections is presented in Figure 4.3-8, and turning movement volumes for AM and PM peak hours are presented in Figure 4.3-9. Based on the existing geometry and volumes, intersection analysis was performed for the AM and PM peak hours and the results are presented in Table 4.3-4. Intersection turning movement counts and LOS calculation sheets are presented in Appendices B and C, respectively.



North of Shaw Off-ramp			
	Basic		
	Volume	Density	LOS
AM	2,027	11.7	B
PM	1,885	10.9	A

Between Shaw Ramps			
	Merge		
	Volume	Density	LOS
AM	2,027	14.3	B
PM	1,886	13.5	B

Shaw to Ashlan			
	Merge		
	Volume	Density	LOS
AM	2,772	18.8	B
PM	2,505	17.0	B

Shaw to Ashlan			
	Diverge		
	Volume	Density	LOS
AM	2,772	21.5	C
PM	2,505	20.4	C

Between Ashlan Ramps			
	Basic		
	Volume	Density	LOS
AM	2,485	14.4	B
PM	2,009	11.6	B

Ashlan to Golden State			
	Merge		
	Volume	Density	LOS
AM	2,974	20.6	C
PM	2,244	16.1	B

Golden State to Dakota			
	Weave		
	Volume	Density	LOS
AM	4,054	20.8	B
PM	3,240	18.0	B

Dakota to Shields			
	Diverge		
	Volume	Density	LOS
AM	3,961	27.8	C
PM	2,994	22.6	C

Between Shields Ramps			
	Basic		
	Volume	Density	LOS
AM	3,910	33.3	D
PM	2,930	29.8	D

Shields to Princeton			
	Merge		
	Volume	Density	LOS
AM	3,961	27.8	C
PM	2,994	21.4	C

Shields to Princeton			
	Diverge		
	Volume	Density	LOS
AM	3,961	30.0	D
PM	2,994	23.9	C

Between Princeton Ramps			
	Basic		
	Volume	Density	LOS
AM	4,350	25.2	C
PM	3,214	18.6	C

Princeton to Clinton			
	Merge		
	Volume	Density	LOS
AM	4,390	26.5	C
PM	3,253	20.7	C

Princeton to Clinton			
	Diverge		
	Volume	Density	LOS
AM	4,390	30.4	D
PM	3,253	24.4	C

Clinton to Parkway			
	Basic		
	Volume	Density	LOS
AM	4,143	24.0	C
PM	3,039	26.6	D

Parkway to McKinley			
	Merge		
	Volume	Density	LOS
AM	4,808	30.3	D
PM	3,563	23.4	C

South of McKinley			
	Merge		
	Volume	Density	LOS
AM	5,282	33.1	D
PM	3,894	25.6	C

North of Shaw Off-ramp			
	Merge		
	Volume	Density	LOS
AM	2,060	15.5	B
PM	2,196	15.9	B

Ashlan to Shaw			
	Basic		
	Volume	Density	LOS
AM	1,899	11.0	A
PM	2,117	12.2	B

Ashlan to Shaw			
	Diverge		
	Volume	Density	LOS
AM	2,194	18.6	B
PM	2,513	20.7	B

Ashlan to Shaw			
	Merge		
	Volume	Density	LOS
AM	2,194	14.7	B
PM	2,513	16.3	B

Between Ashlan On-Ramps			
	Merge		
	Volume	Density	LOS
AM	2,030	15.3	B
PM	2,362	16.7	B

Ashlan Off-ramp to Ashlan On-ramp			
	Basic		
	Volume	Density	LOS
AM	1,869	10.8	A
PM	2,289	13.2	B

Golden State to Ashlan			
	Diverge		
	Volume	Density	LOS
AM	2,384	20.2	C
PM	3,156	25.4	C

Clinton to Golden State			
	Diverge		
	Volume	Density	LOS
AM	3,075	23.0	C
PM	4,044	28.5	D

Clinton to Golden State			
	Merge		
	Volume	Density	LOS
AM	3,075	20.1	C
PM	4,044	25.5	C

Between Clinton Ramps			
	Basic		
	Volume	Density	LOS
AM	2,785	16.1	B
PM	3,591	20.8	C

McKinley to Clinton			
	Basic		
	Volume	Density	LOS
AM	3,514	14.9	B
PM	4,900	20.8	C

McKinley to Clinton			
	Basic		
	Volume	Density	LOS
AM	3,514	20.3	C
PM	4,900	28.9	D

South of McKinley			
	Diverge		
	Volume	Density	LOS
AM	3,798	27.0	C
PM	5,256	34.1	D

Figure 4.3-7
Existing Conditions Freeway Segment Analysis – Proposed SR 99 Realignment

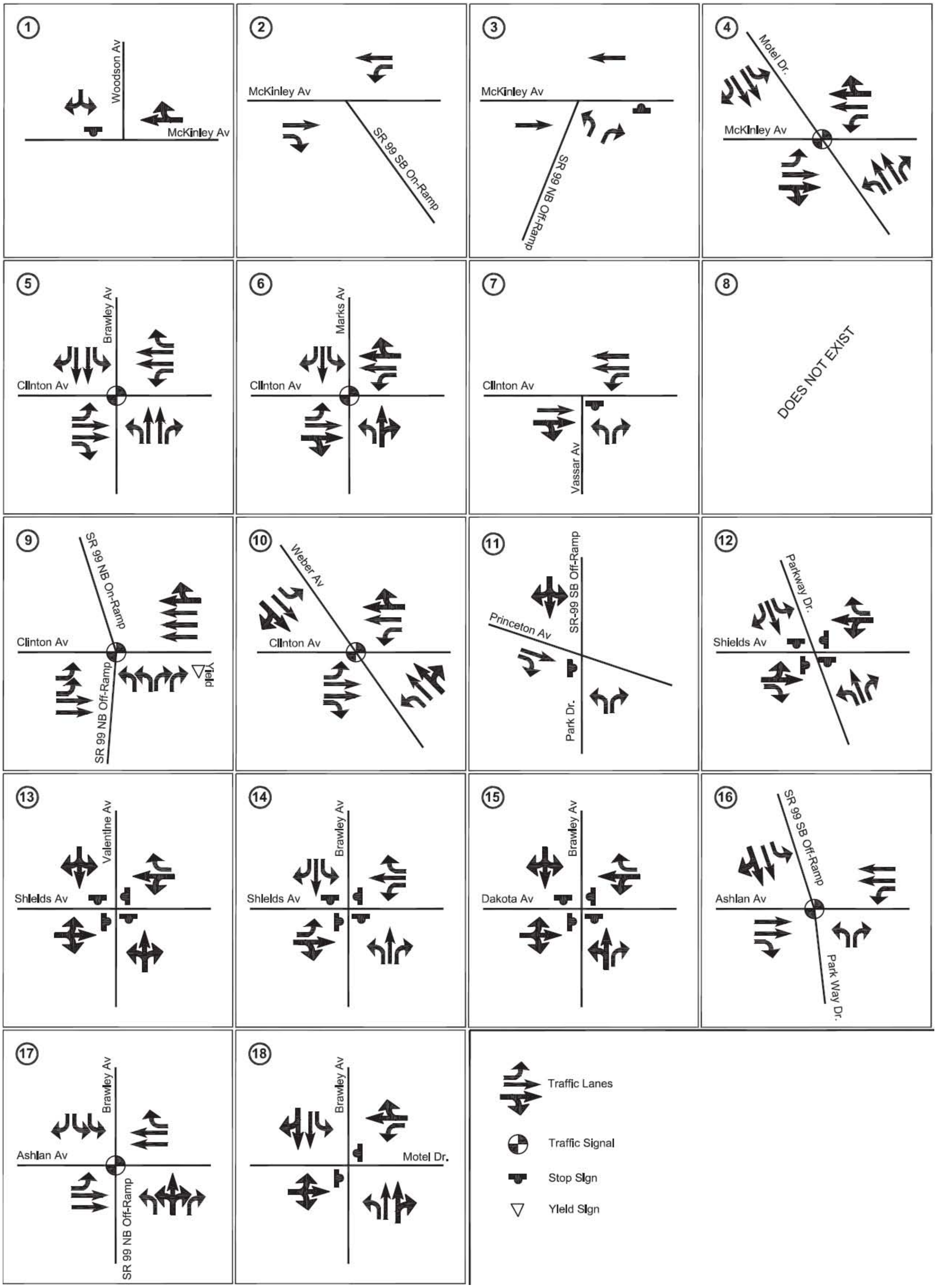


Figure 4.3-8
Existing Intersection Geometry – Proposed SR 99 Realignment

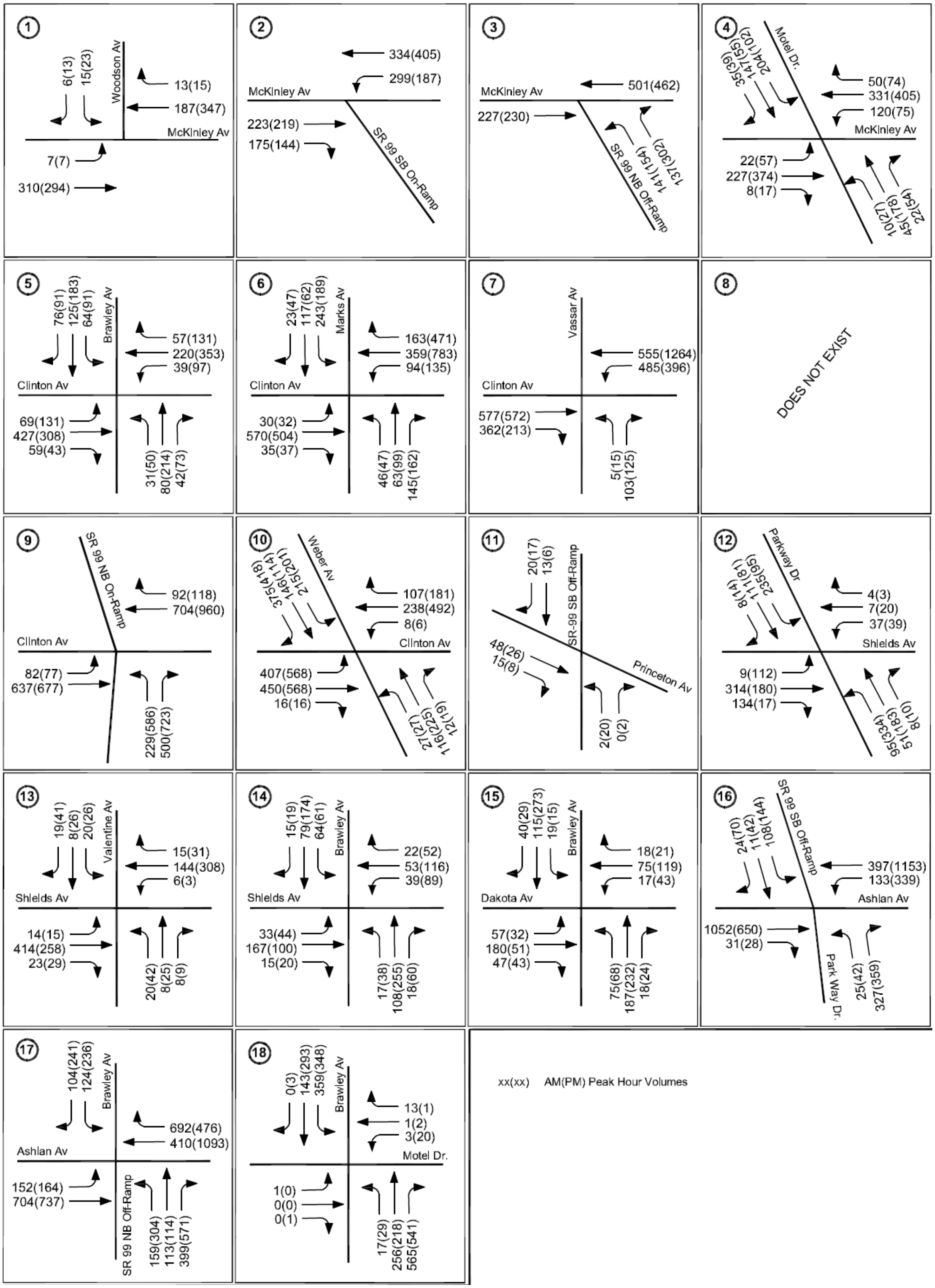


Figure 4.3-9
Existing Intersection Volumes – Proposed SR 99 Realignment

Table 4.3-4
Existing Intersection Operating Conditions – Proposed SR 99 Realignment

			AM Peak Hour			PM Peak Hour		
	Intersection	Control	Delay (sec)	LOS	ICU	Delay (sec)	LOS	ICU
1	McKinley Ave and Woodson Ave	U[a]	12	B	0.34	14	B	0.33
2	McKinley Ave and SR 99 SB On-ramp	U[a]	10	A	0.44	9	A	0.43
3	McKinley Ave and SR 99 NB Off-ramp	U[a]	17	C	0.44	16	C	0.43
4	McKinley Ave and Golden State Blvd	S	15	B	0.47	14	B	0.46
5	Clinton Ave and Brawley Ave	S	15	B	0.41	20	B	0.46
6	Clinton Ave and Marks Ave	S	34	C	0.66	45	D	0.86
7	Clinton Ave and Vassar Ave	U[a]	>50	F	0.73	>50	F	0.63
8	Clinton Ave and SR 99 SB Ramps	Does not exist under existing conditions						
9	Clinton Ave and SR 99 NB Ramps	S	10	A	0.45	13	B	0.55
10	Clinton Ave and Weber Ave	S	36	D	0.71	64	E	0.91
11	Princeton Ave and SR 99 SB Ramps/Parkway Dr	U[a]	9	A	0.16	9	A	0.21
12	Shields Ave and SR 99 SB Ramps/Parkway Dr	U	14	B	0.56	22	C	0.61
13	Shields Ave and Valentine Ave	U	12	B	0.47	12	B	0.43
14	Shields Ave and Brawley Ave	U	9	A	0.41	13	B	0.52
15	Dakota Ave and Brawley Ave	U	14	B	0.61	16	C	0.62
16	Ashlan Ave and SR 99 SB Ramp/Parkway Dr	S	38	D	0.70	49	D	0.63
17	Ashlan Ave and SR 99 NB Ramp/Brawley Ave	S	32	C	0.78	56	E	0.83
18	Brawley Ave and Golden State Blvd	U[a]	>50	F	0.64	>50	F	0.66
			Signalized Avg ICU		0.60	Signalized Avg ICU		0.69
			Unsignalized Avg ICU		0.48	Unsignalized Avg ICU		0.49

Notes:
[a] Two-way stop controlled intersection. Delay reported for worst movement only.
U = Unsignalized, S = Signalized

As indicated in the table, all the intersections operate at LOS D or better under existing conditions except the intersections of Clinton Avenue/Weber Avenue and Ashlan Avenue/SR 99 Northbound ramps/Brawley Avenue, which operate at LOS E under PM peak hour, and Clinton Avenue/Vassar Avenue and Brawley Avenue/Golden State Boulevard, which operate at LOS F under AM and PM peak hours.

4.3.5 Fresno Analysis between McKinley Avenue and SR 180

In Fresno County, the proposed at-grade HST alignment between McKinley Avenue and SR 180 would affect traffic circulation in this area. To assess the effect of the project, roadway analysis was performed in the vicinity of the proposed HST alignment and is presented below.

Roadway analysis was performed on segments along McKinley Avenue, Weber Avenue, Northwest Avenue, Olive Avenue, Golden State Boulevard, Belmont Avenue, and H Street to capture the effects on traffic circulation in the vicinity of the HST alignment.

ADT volume was collected on the analysis segments in March 2011. LOS was calculated based on the capacities presented in the Florida Tables. Table 4.3-5 presents the ADT, roadway conditions and LOS on the roadway segments. ADT counts are presented in Appendix B and LOS calculations are presented in Appendix C.

Table 4.3-5
Existing Conditions Roadway Segment Analysis – Between McKinley Avenue and SR 180

No.	Roadway Segment	ADT	Number of Lanes (N/E or S/W)	LOS
1	Northwest Ave, north of W McKinley Ave	13,178	2/2	D
2	N Weber Ave, north of W McKinley Ave	6,200	1/1	D
3	W McKinley Ave, east of Northwest Ave	12,054	2/2	D
4	Northwest Ave, south of W McKinley Ave	6,660	2/2	C
5	N Weber Ave, north of W Olive Ave	7,762	1/1	D
6	W Olive Ave, west of N Weber Ave	10,732	2/2	D
7	W Olive Ave, east of N Weber Ave	11,202	2/2	D
8	N Weber Ave, south of W Olive Ave	6,476	1/1	D
9	N Golden State Blvd, north of W Belmont Ave	3,826	2/2	C
10	N Weber Ave, north of W Belmont Ave	7,142	1/1	D
11	W Belmont Ave, west of N Golden State Blvd	9,536	2/2	C
12	E Belmont Ave, east of N Weber Ave	9,768	2/2	C
13	N H St, south of E Belmont Ave	6,090	2/2	C

As indicated in Table 4.3-5, all the analysis segments operate at LOS D or better under existing conditions.

4.4 Existing Transit Conditions

There are various modes of transit in the study area, including bus services and Amtrak passenger rail service. Routes for transit modes are shown in Figures 4.4-1(a) through 4.4-1(d) and are described below.

4.4.1 Regional Transit Service

Regional bus service in the study area is provided by Greyhound-Trailways, which provides scheduled bus service though the San Joaquin Valley, with bus terminals located in the cities of Merced, Madera, and Fresno. The company provides daily service from Merced, Madera, and Fresno stations to destinations such as San Jose, San Francisco, Sacramento, Los Angeles, San Diego, and Las Vegas. Most of the northbound trips from Fresno run via the cities of Madera and Merced. The service runs five trips to San Francisco (two via Madera connecting San Jose and three via Madera and Merced), four trips to Sacramento (via Madera and Merced), and ten trips to Los Angeles. Service to Las Vegas is provided via transfers at Bakersfield or Los Angeles. Greyhound-Trailways also provides charter service to Yosemite Valley.

Transportes InterCalifornias provides additional regional bus service in the Fresno area. This service provides daily round trip service from Fresno to Los Angeles with connecting services onward to Santa Ana, San Ysidro, and Tijuana.

In the Merced area, additional regional bus service is provided by Yosemite Area Regional Transportation System (YARTS); countywide transportation is provided by Merced Transit System (MTS) urban and rural bus services, known as "The Bus." YARTS provides bus service into Yosemite National Park. YARTS provides connections with all intercity transportation providers in Merced (that is, with Amtrak and Greyhound at the terminal and with Great Lakes Airlines at the airport).

4.4.2 Local Transit

4.4.2.1 Merced County

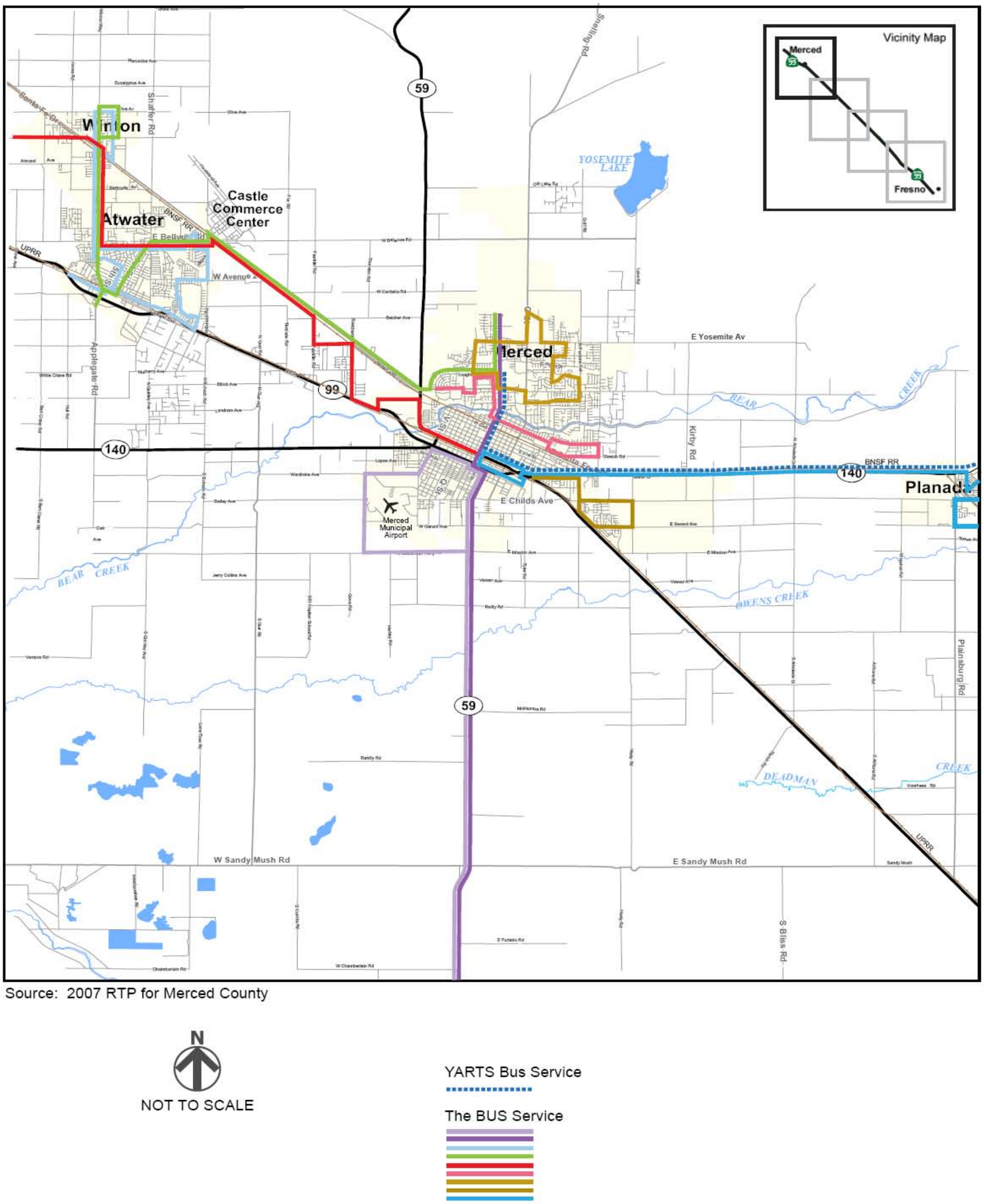
The five public transportation providers in Merced County are the MTS, the Atwater Taxi Service (ATS), the City of Los Banos Van Service, the City of Dos Palos Van Service, and the Merced Area Regional Transit System (MARTS).

Merced County operates MTS urban and rural bus services, or The Bus. The Bus serves the County of Merced, its 6 incorporated cities, and 13 unincorporated communities and townships. The service routes within Merced vicinity are shown on Figure 4.4-1(a). Currently, this service has 27 buses operating on 16 fixed routes and another 16 providing demand-response (Dial-A-Ride) service. The Bus facility is described in detail in Section 4.9.4 of this report.

The Merced Cab Company provides 24-hour-a-day, door-to-door service to customers in the Merced urban area.

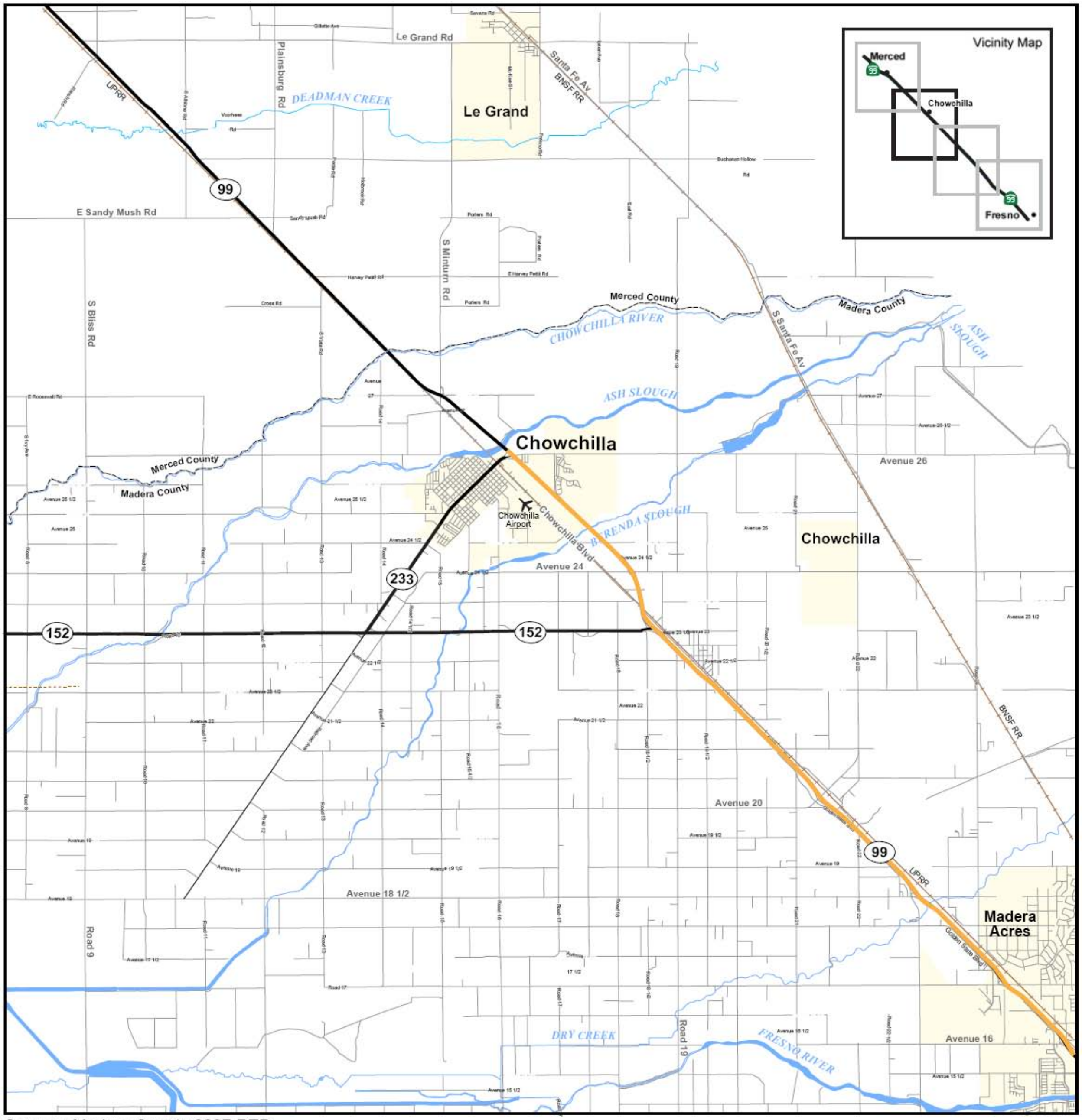
4.4.2.2 Madera County

Public transit in Madera County is provided by Madera County Connection, Madera Area Express (MAX), Dial-A-Ride, and Chowchilla Area Transit Express (CATX). The service routes within Madera vicinity are shown on Figures 4.4-1(b) and 4.4-1(c). Public transportation is provided by fixed-route and demand-response transit systems within the county.



Source: 2007 RTP for Merced County

Figure 4.4-1(a)
Existing Transit Routes in the Merced Area



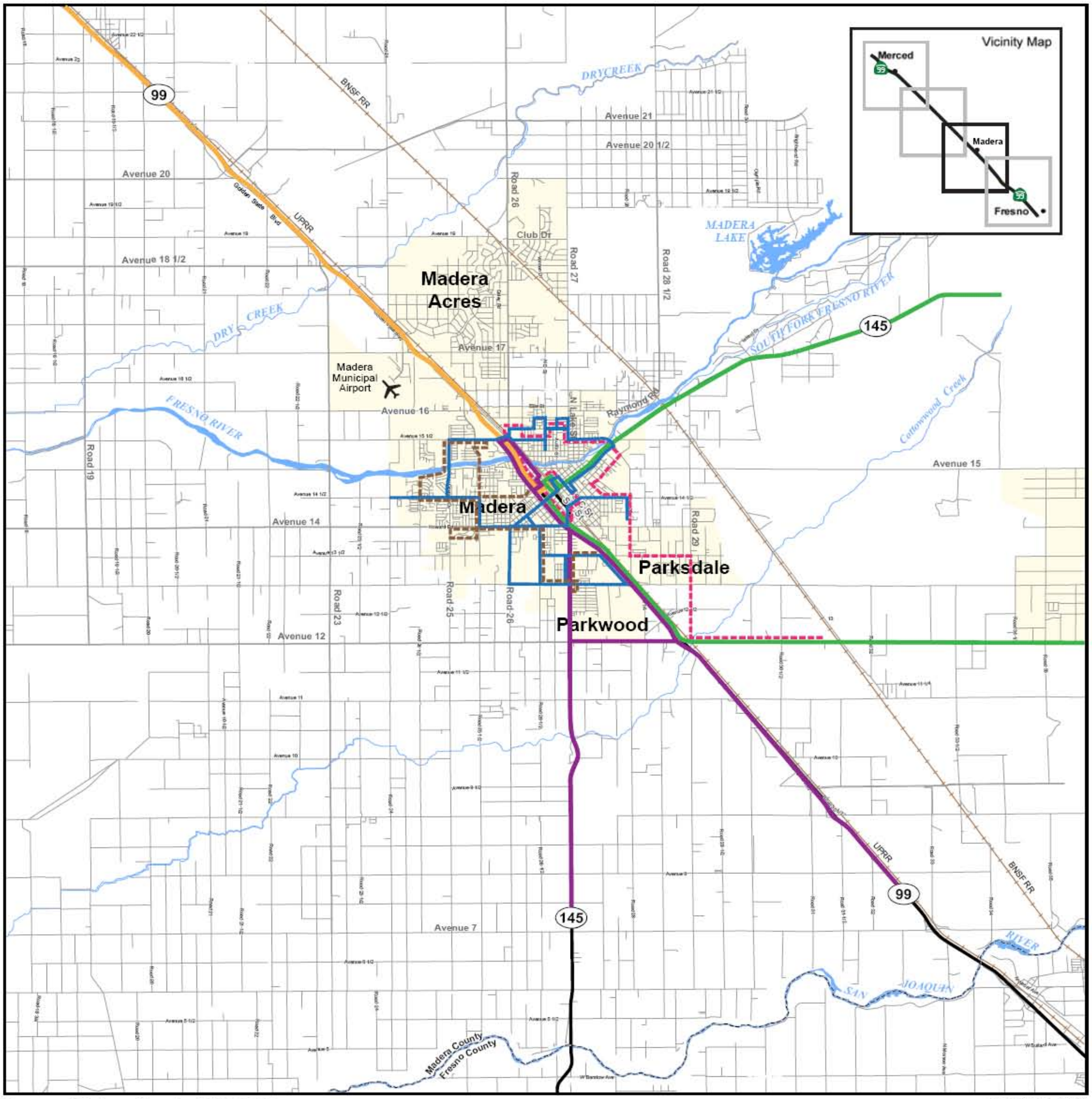
Source: Madera County 2007 RTP

N
NOT TO SCALE

Madera County Connection System

Chowchilla - Fairmead - Madera Route

Figure 4.4-1(b)
Existing Transit Routes in the Chowchilla Area



Source: Madera County 2007 RTP

February 4, 2010

NOT TO SCALE

Madera Area Express System

- Madera Area Express System

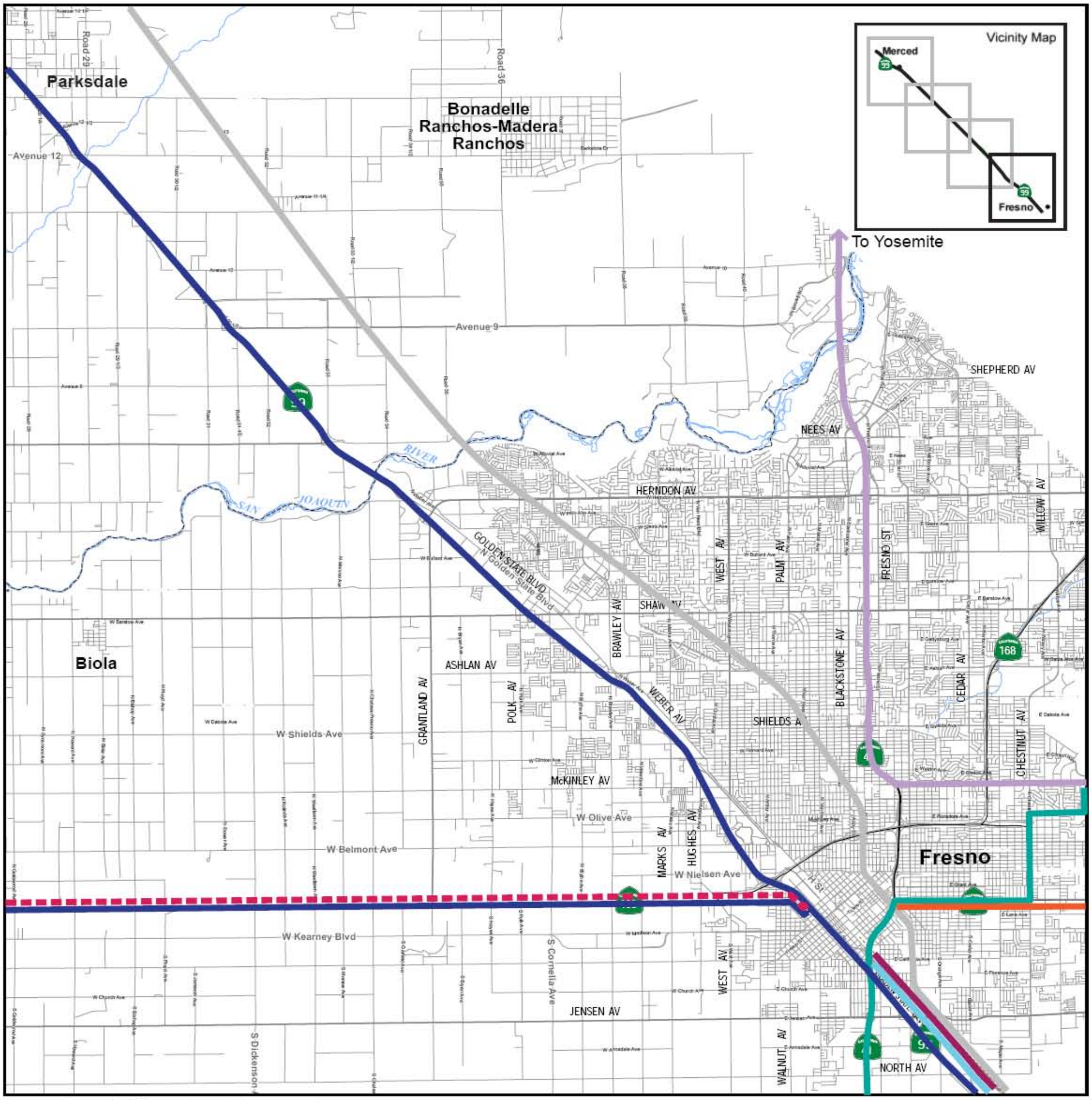
JET Express System

- JET Express East
- JET Express West

Madera County Connection System

- Chowchilla - Fairmead - Madera Route
- Eastin Arcola - Ripperdan - La Vina Route
- Eastern Madera County - Madera Route

Figure 4.4-1(c)
Existing Transit Routes in the Madera Area



Source: Council of Fresno County Governments

Figure 4.4-1(d)
Existing Intercity Transit Routes in the Fresno Area (excluding FAX service)

The County of Madera operates the Madera County Connection (MCC), an intercity fixed-route system. MCC operates from 6 a.m. to 8 p.m. on weekdays. The City of Madera also operates MAX, a fixed-route system that provides service within the city limits. MAX operates from 7 a.m. to 6:30 p.m. on weekdays and from 9 a.m. to 4 p.m. on Saturdays. The City also operates Dial-A-Ride, a demand-responsive paratransit system that operates from 7 a.m. to 6:30 p.m. on weekdays, from 9 a.m. to 4 p.m. on Saturdays and from 8:30 a.m. to 2:30 p.m. on Sundays. In January 2009, the City of Madera also initiated the Jobs, Education, and Training (JET) Express bus service, to provide quick and direct transit service between the Intermodal Center and Madera State Center Community College.

The City of Chowchilla operates CATX, a demand-responsive service. CATX operates from 8 a.m. to 3:30 p.m. on weekdays only.

4.4.2.3 Fresno County

Public transit in Fresno County is provided by bus service offered by Fresno Area Express (FAX), Greyhound Bus Lines, Fresno County Rural Transit Agency, Fresno County Economic Opportunities Commission, and numerous private taxi services. FAX includes 20 fixed-route bus lines and paratransit service, serving the greater Fresno Metropolitan Area with a fleet of over 100 buses (City of Fresno 2007). FAX service is described in detail in Section 4.10.3 of this report. Transit routes serving Fresno County (not including FAX) are presented in Figure 4.4-1(d).

4.5 Aviation

Two commercial airports serve the Merced to Fresno section: Fresno Yosemite International Airport (FAT) and Merced Municipal/Macready Field (MCE). Additionally, several general aviation airports are located in the corridor, including two (Chowchilla Municipal Airport and Madera Municipal Airports [MAE]) that are located near the potential HST alignment. These airports are described below:

- FAT is located northeast of the City of Fresno, east of SR 41. A municipally owned facility, it is the major air carrier airport in the Central San Joaquin Valley. Eight certified carriers provide domestic flights to most major airports in the western United States and Dallas, Texas. The airport also features direct international flights to Guadalajara, Mexico (City of Fresno 2002).
- The airport terminal includes a recently remodeled lobby and a two-story concourse with six gates. The facility has two runways – a primary 9,227-foot commercial runway and a second, shorter runway for smaller aircraft.
- The facility provides 2,259 surface parking spaces. Parking rates are $8.00 per day for long term and $12.00 per day for short term. The airport also features a consolidated rental car facility.
- MCE is located southwest of Downtown Merced, south of SR 140. The 450-acre facility is owned and operated by the City of Merced. Commercial flights connect MCE with Las Vegas via two roundtrips per day. Free parking is provided for both short- and long-term uses.
- Chowchilla Municipal Airport is a general aviation facility situated on approximately 32 acres on the southeast edge of the City of Chowchilla, just west of SR 99. The airport is owned and operated by the city. The facility is an uncontrolled airport with no onsite supervisor or tower. The airport has a 3,250-foot lighted runway.
- MAE is situated 3 miles northwest of the City of Madera, west of SR 99. It is owned and operated by the city. A 5,544–foot lighted primary runway is suitable for business jet service. There is a secondary 3,900–foot runway. Other facilities include an administration building, various hangars and tie-downs, and a fueling facility.

4.6 Passenger Rail Service

Conventional passenger rail service in the study area is provided by the Amtrak San Joaquin Route, connecting the East Bay Area and the Central Valley. The San Joaquin Corridor currently shares the track with the BNSF freight line on a route running east of SR 99. This corridor serves a portion of the same intercity markets as the proposed HST. However, there is not currently a direct rail connection to the San Francisco/San Jose area, nor is direct passenger rail service provided to Southern California. Instead, the rail service ends in Bakersfield and a bus connection is provided to Los Angeles.

There are existing Amtrak stations in Merced, Madera, and Fresno. The Amtrak stations are located just east of each city's downtown area on the BNSF rail line. Amtrak augments the San Joaquin trains with an extensive system of Thruway buses with connections at the train stations. From Merced, Amtrak buses provide connections to Yosemite and Monterey.

Currently, the San Joaquin Route operates four trips daily in each direction from Oakland to Bakersfield and two trips daily in each direction from Sacramento to Bakersfield, providing a total of six daily roundtrips serving the study area. The intercity route carried more than 977,000 riders in 2009-2010, according to passenger boarding reports from Amtrak and the California State Rail Plan (Amtrak 2010, Caltrans 2008). The current scheduled running time between Bakersfield and Oakland averages 6 hours, 9 minutes, at an average speed of 51.3 mph. Travel time from Merced to Fresno is approximately 1 hour. The maximum speed on the route is 79 mph. Because the San Joaquin route shares the BNSF track, reliability (68% on time performance) is relatively low due to conflicts with freight traffic.

4.7 Freight Rail Service

The Merced to Fresno corridor is served by the following two Class 1 freight railroads operating the length of the corridor; approximately 20 to 24 freight trains per day pass through the Merced to Fresno corridor on either railroad:

- The BNSF Railway operates more than 58 route miles within the corridor and has 77.2 track miles in operation (Caltrans 2008). The railroad alignment is generally located east of the SR 99 corridor. Top speed for freight operation is 65 mph. The railroad along this corridor is primarily single track, with a few double-track segments. The average number of daily one-way train operations within the corridor is 33 movements.
- BNSF is also the primary owner of the railroad right-of-way used by the Amtrak San Joaquin Route. The railroad owns a 276-mile section of the San Joaquin Corridor from Bakersfield to Port Chicago.
- The UPRR Railway operates over 60.1 route miles within the HST corridor and has 69.7 track miles in operation (Caltrans 2008). The alignment runs parallel to SR 99 for most of the corridor. Top speed for freight operation is 70 mph. The UPRR Railway along this corridor is also primarily single track. The average number of daily one-way train operations within the corridor is 24 trips.

Route mile versus track mile

Route miles may have one or multiple sets of parallel tracks, whereas 'track mile' is used to describe the literal number of miles of single track. A track mile would be double the length for a 2-track section, while a route mile would not count both tracks. For example, 1 mile of double-track operation measures as 1 route mile, but 2 track miles.

Freight railroads sometimes only build single track with short distances of double track where oncoming trains can bypass each other before returning to single track.

4.8 Railroad Accident History

This section presents the railroad accident history in Merced, Madera, and Fresno counties as obtained from the FRA website for the BNSF and UPRR railway lines (FRA 2009), not including Amtrak accidents.

Table 4.8-1 presents the findings of train accident frequency and severity between the years 2004 and 2009. As shown in the table, no fatal accidents occurred. Ninety-four % of the accidents (51 of 54) involved property damage only and 6% (3 of 54) were injury accidents.

Table 4.8-1
Train Accident Frequency and Severity (2004 – 2009[a])

County	Number of Accidents				Casualties	
	Total	Fatal	Injury	PDO[b]	Killed	Injured
Merced	3	0	0	3	0	0
Madera	3	0	1	2	0	5
Fresno	48	0	2	46	0	3
Total	54	0	3	51	0	8

[a] Data are from January 2004 through October 2009
[b] Property damage only
Source: FRA (2009).

Table 4.8-2 presents the type and cause of train accidents from 2004 through 2009. As shown in the table, most of the accidents (72% [39 of 54]) involved train derailment. The most common cause of accidents was faulty tracks (44% [24 of 54]). The second most common cause of accidents was human error (33% [18 of 54]).

Table 4.8-2
Train Accident Type and Cause (2004 – 2009[a])

County	Type of Accident				Cause of Accident				
	Coll.[b]	Der.[c]	Other	Total	Human Error	Faulty Track	Equip.[d]	Signal Malfct.[e]	Other
Merced	0	2	1	3	0	1	1	0	1
Madera	1	2	0	3	1	1	0	0	1
Fresno	2	35	11	48	17	22	3	0	6
Total	3	39	12	54	18	24	4	0	8

[a] Data are from January 2004 through October 2009
[b] Collision
[c] Derailment
[d] Equipment
[e] Signal malfunction
Source: FRA (2009).

4.9 Existing Conditions around Proposed Merced HST Station

This section discusses existing transportation conditions around the proposed Downtown Merced Station. This information is more detailed than the previous regional discussion because of the potential changes in local traffic conditions generated by a downtown HST station.

4.9.1 Merced Station Area

The Merced HST station is proposed to be located between 15th and 16th Streets and between Martin Luther King Jr. Way and G Street. The station would be located on property just south of the UPRR corridor. The surrounding land use is mixed, with the station site zoned for Regional Community Commercial and land south of the station zoned for General Commercial. SR 99 is one block south of the station site.

The proposed station would be in the vicinity of the existing Merced Transit Center on 16th Street, between M and O Streets. This facility includes provisions for local and regional bus services (including YARTS) and an information center. Further information on local transit service is provided in Section 4.9.4. The historic Southern Pacific Company station is part of this complex. The station (which does not currently have passenger service) consists of a one-story station building, a side platform, and two UPRR tracks.

4.9.2 Merced Station Traffic Study Area

The traffic study area for the proposed HST station at the Merced Transit Center was developed through discussions with City of Merced staff. A total of 49 intersections were identified for analysis, as listed below and shown in Figure 4.9-1.

1) 16th Street/SR 59
2) Olive Avenue - Santa Fe Drive/SR 59
3) 13th Street - SR 99 Southbound Off-ramp/V Street
4) 14th Street - SR 99 Northbound On-ramp/V Street
5) 15th Street/V Street
6) 16th Street/V Street
7) 13th Street/R Street
8) SR 99 Northbound Off-ramp - 14th Street/R Street
9) 15th Street/R Street
10) 16th Street/R Street
11) Olive Avenue/R Street
12) 15th Street/O Street
13) 16th Street/O Street
14) 15th Street/M Street
15) 16th Street/M Street
16) Olive Avenue/M Street
17) W 2nd Street-Grogan Avenue/Northwest Avenue
18) Childs Avenue/Martin Luther King Jr. Way
19) 13th Street/Martin Luther King Jr. Way
20) SR 99 Southbound Ramps/Martin Luther King Jr. Way
21) SR 99 Northbound Ramps/Martin Luther King Jr. Way
22) 14th Street/Martin Luther King Jr. Way
23) 15th Street/Martin Luther King Jr. Way
24) 16th Street/Martin Luther King Jr. Way
25) 13th Street/G Street
26) SR 99 - 14th Street/G Street
27) 16th Street/G Street
28) Olive Avenue/G Street
29) SR 99 Southbound On-ramp/SR 140
30) SR 99 Southbound Off-ramp/SR 140
31) SR 99 Northbound Off-ramp/SR 140
32) Glen Avenue-Motel Drive/SR 140
33) 14th Street / O Street
34) 13th Street / M Street
35) 14th Street / M Street

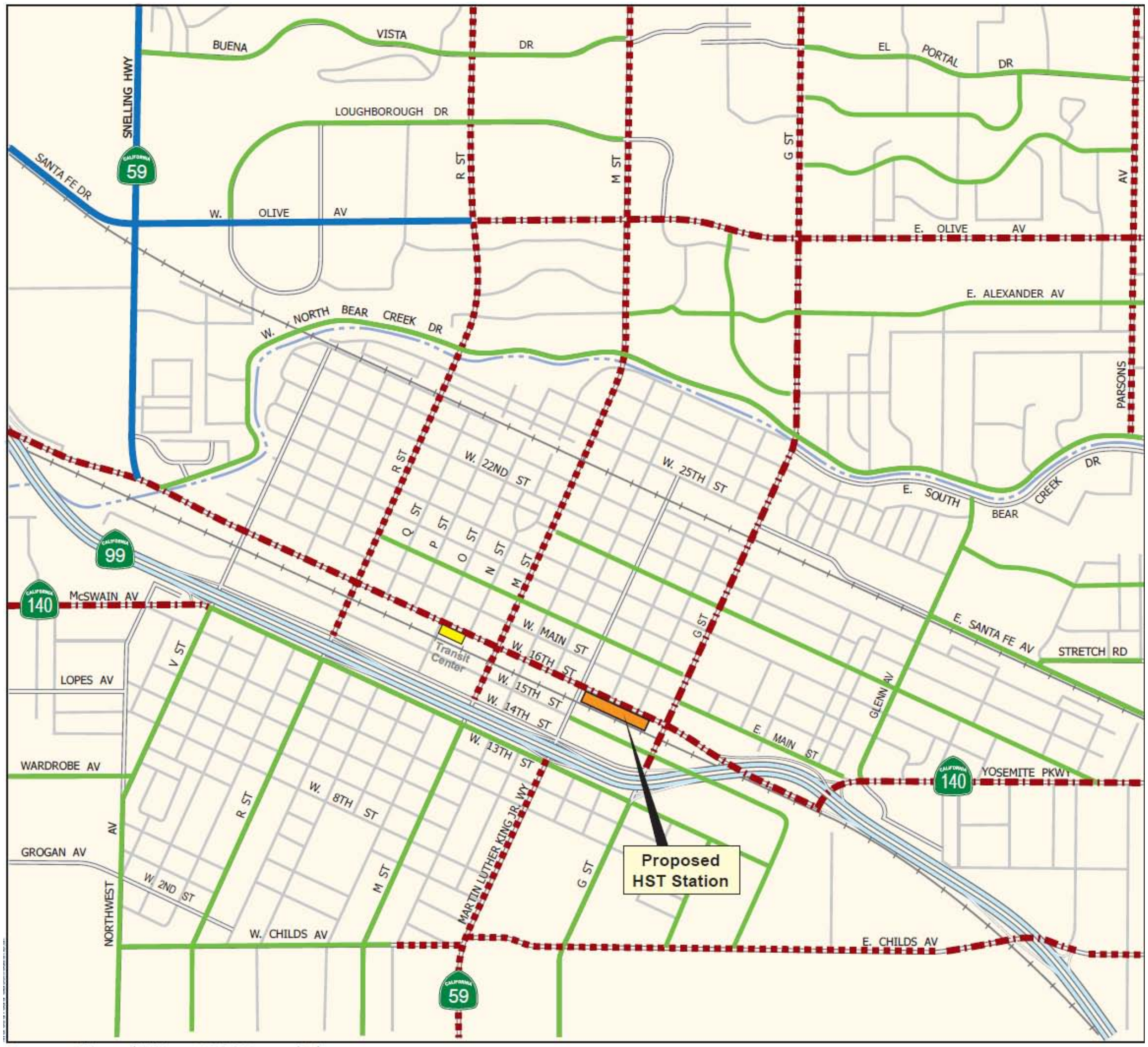
36) Main Street / M Street
37) 18th Street / M Street
38) 15th Street / Canal Street
39) 16th Street / Canal Street
40) 11th Street / Martin Luther King Jr. Way
41) Main Street / Martin Luther King Jr. Way
42) 18th Street / Martin Luther King Jr. Way
43) 16th Street / H Street
44) Main Street / H Street
45) 15th Street / G Street
46) Main Street / G Street
47) 18th Street / G Street
48) 15th Street / D Street
49) 16th Street / D Street

4.9.3 Roadways

This section describes existing roadway conditions in the vicinity of the proposed Merced HST station. Regional access to the station is provided by SR 99, SR 59 and SR 140, and local access to the station is provided along 15th and 16th Streets. Other major streets in the vicinity of the station are also described below and shown in Figure 4.9-2.

- SR 99 is the only freeway located in the vicinity of the Downtown Merced station. Access to the station from the freeway is provided via the ramps at V Street, R Street, Martin Luther King Jr. Way, and G Street.
- In the vicinity of the station, SR 59 is located along the SR 99 freeway between Martin Luther King Jr. Way and V Street. SR 59 can be accessed from the proposed station via 16th Street and Martin Luther King Jr. Way.
- Olive Avenue is a major arterial west of R Street and a divided arterial east of R Street. Olive Avenue has three lanes in each direction.
- Childs Avenue is a minor arterial with one lane in each direction. It extends between Northwest Avenue near MCE to the west and the city limit to the east.
- 16th Street is a divided arterial with two lanes in each direction. It extends from the SR 99/SR 140 junction to the south and SR 99 to the north, just north of the SR 59/SR 99 junction. The existing Merced Transit Center is located on 16th Street near N Street.
- Martin Luther King Jr. Way is a minor arterial with two lanes in each direction south of 16th Street. North of 16th Street, Martin Luther King Jr. Way is one lane in each direction. South of SR 99, SR 59 is designated along this roadway.
- G Street extends between SR 99 and SR 59. It is classified as an arterial and major collector that serves through traffic and connects to the University of California Merced and areas to the north.
- M Street is a collector with one lane in each direction south of SR 99. North of SR 99, M Street is a minor arterial with two lanes in each direction.
- R Street is a collector with one lane in each direction south of SR 99. North of SR 99, R Street is a minor arterial with two lanes in each direction.

Figure 4.9-1
Study Intersections – Merced Station



Source: Merced Vision 2015 General Plan

May 6, 2011

Figure 4.9-2
Roadway Classification in Downtown Merced

The City of Merced has an extensive roadway classification system. Table 4.9-1 provides a brief description of each of the roadway classifications, as presented in the City of Merced General Plan.

Table 4.9-1
City of Merced Roadway Classification

Roadway Classification	Description
Major Arterial	Roadway has 4 to 6 lanes with 128 feet right-of-way. Driveway access is fully restricted and on-street parking is prohibited.
Arterial	Roadway has 4 to 6 lanes with 128 feet right-of-way. Generally no direct access is provided; right-turn-in/right-turn-out local streets or combined access driveways may be permitted. On-street parking is prohibited.
Divided Arterial	Roadway has 4 to 6 lanes with 118 feet right-of-way. Generally no direct access is provided; right-turn-in/right-turn-out local streets or combined access driveways may be permitted. On-street parking is prohibited.
Minor Arterial	Roadway has 2 to 4 lanes with 94 feet right-of-way. Generally no direct access is provided; right-turn-in/right-turn-out local streets or combined access driveways may be permitted. On-street parking is generally not permitted.
Major Collector	Roadway has 2 to 4 lanes with 68 to 74 feet right-of-way. Generally no direct access to the adjacent properties is allowed. On-street parking is permitted in selected areas.
Collector	Roadway has 2 lanes with 68 feet right-of-way. Partial driveway access is permitted based on traffic analysis. On-street parking is permitted in selected areas.
Local	Roadway has 2 lanes. Full driveway access allowed to the adjacent properties. On-street parking is generally permitted.
Expressway[a]	Roadway has 6 to 8 lanes with 150 feet right-of-way. Driveway access is fully restricted and on-street parking is prohibited.
Transitway[a]	Roadway has two- to six-lanes. Right-of-way and access restrictions vary depending on the transitway function. Some segments of transitways allow buses only, while others function as arterials and also provide exclusive High-Occupancy Vehicle (HOV) lanes.

[a] Future roadway

Source: City of Merced (1997).

4.9.4 Existing Transit

4.9.4.1 The Bus

The Public Transportation Services of the Transit Joint Powers Board Authority for Merced County governs The Bus service within the County. The Bus serves the County of Merced, its 6 incorporated cities, and 13 unincorporated communities and townships. Currently, this service has 27 buses operating on 16 fixed routes and another 16 buses providing demand response (Dial-A-Ride) service. Table 4.9-2 presents the bus routes and the weekday service frequency in the City of Merced. Weekend service is provided on Saturdays only; no service is provided on Sunday. All routes except 5X, 10A, and 10X operate on Saturday. Weekend service is generally provided between 9 a.m. and 5 p.m., with fewer trips served compared to standard weekday service.

Existing transit lines serving the Downtown Merced area are shown in Figure 4.9-3. As indicated on the figure, all bus lines serve the proposed station area except Routes 8, 11, and 15.

Table 4.9-2
Merced Bus Service Weekday Service Frequency

Route	Weekday Service Frequency
Route 1 City Shopper 1	30 – 60 minutes
Route 2 City Shopper 2	30 – 60 minutes
Route 3 M Street Shuttle	30 minutes
Route 4 G Street Shuttle	30 minutes
Route 5 South East Merced – Downtown	45 minutes
Route 5X Amtrak – Downtown Merced HAS	40 minutes
Route 7 Turlock – Merced	90 minutes[a]
Route 8 Winton – Atwater – Merced	60 minutes[b]
Route 9 Le Grand – Planada – Merced	45 minutes[c]
Routes 10 & 10a Los Banos – Dos Palos – Merced Shuttle	Varies
Route 11 Crosstown Shuttle	30 minutes
Route 12 The R Street Shuttle	30 minutes
Route 14 Los Banos Bus Route	30 minutes
Route 15 Sierra Gardens – Mall – Wal-Mart	45 minutes
Route 16 Atwater – Winton	60 minutes

[a] 8 round trips/day
[b] 9 round trips/day
[c] 7 round trips/day
Source: Merced County Joint Transit Authority (2008).

Source: City of Merced (2011a)

Figure 4.9-3
Existing Transit Facilities in Downtown Merced

4.9.4.2 Transit Ridership

MCAG performed a comprehensive operational analysis for The Bus service in the county in 2003. The summary of the average daily ridership by route presented in Table 4.9-3 was an average of two survey days of study. Based on the information presented in table, the highest ridership was observed on Routes 1, 2, and 3, and the lowest ridership was observed on Routes 14 and 15 (MCAG 2003).

Table 4.9-3
Merced Transit Ridership

Route	Average Daily Boardings	Percent of Total
Route 1 City Shopper	226	11.5%
Route 2 City Shopper 2	259	13.2%
Route 3 M Street Shuttle	224	11.4%
Route 4 G Street Shuttle	126	6.4%
Route 5 South East Merced – Downtown	114	5.8%
Route 5X Amtrak – Downtown Merced HAS	74	3.7%
Route 7 Turlock – Merced	206	10.5%
Route 8 Winton – Atwater – Merced	190	9.6%
Route 9 Le Grand – Planada – Merced	172	8.7%
Routes 10 & 10a Los Banos – Dos Palos – Merced Shuttle	45	2.3%
Route 11 Crosstown Shuttle	80	4.1%
Route 12 The R Street Shuttle	122	6.2%
Route 14 Los Banos Bus Route	33	1.7%
Route 15 Sierra Gardens – Mall – Wal-Mart	29	1.5%
Route 16 Atwater – Winton	69	3.5%
Source: MCAG (2003).		

4.9.5 Roadway Operating Conditions

Roadway segment analysis in the vicinity of the Merced station was performed in the following locations:

- Main Street (three segments between Martin Luther King Jr. Way and SR 140)
- 16th Street (five segments between SR 59 and G Street)
- 15th Street (three segments between V Street and G Street)
- V Street (three segments between 13th Street and Main Street)
- R Street (three segments between 13th Street and Main Street)
- M Street (three segments between 13th Street and Main Street)
- Martin Luther King Jr. Way (four segments between Childs Avenue and Main Street)
- G Street (three segments between 13th Street and Main Street)

Table 4.9-4 presents the results of the analysis. It can be noted from the table that all the analysis roadway segments operate at LOS D or better under existing AM and PM peak hour conditions except R Street, west of 13th Street that operates at LOS E under PM peak hour.

Table 4.9-4
Existing Roadway Segment Analysis – Downtown Merced Station

Segment	Travel Lanes	AM Peak Hour			PM Peak Hour		
		Vols	V/C	LOS	Vols	V/C	LOS
Main Street							
- Between Martin Luther King Jr. Way and M St	2	237	0.23	A	487	0.48	A
- Between G St and Martin Luther King Jr. Way	4	193	0.09	A	339	0.15	A
- Between Yosemite Pkwy (SR 140) and G St	2	278	0.27	A	292	0.29	A
16th Street							
- Between V St and SR 59	4	1,367	0.62	B	1,888	0.85	D
- Between R St and M St	4	810	0.37	A	1,335	0.60	A
- Between Martin Luther King Jr. Way and M St	4	835	0.38	A	1,328	0.60	A
- Between G St and Martin Luther King Jr. Way	4	825	0.37	A	1,198	0.54	A
- Between Yosemite Pkwy (SR 140) and G St	4	652	0.30	A	987	0.45	A
15th Street							
- Between R St and M St	2	120	0.12	A	322	0.32	A
- Between Martin Luther King Jr. Way and M St	2	98	0.10	A	294	0.29	A
- Between G St and Martin Luther King Jr. Way	2	149	0.15	A	293	0.29	A
V Street							
- West of 13th St	2	686	0.67	B	862	0.84	D
- Between 13th St and 16th St	4	1,199	0.54	A	1,525	0.69	B
- East of 16th St	2	648	0.63	B	754	0.74	C
R Street							
- West of 13th St	2	753	0.74	C	990	0.97	E
- Between 13th St and 16th St	4	964	0.44	A	1,391	0.63	B
- East of 16th St	4	1,030	0.47	A	1,586	0.72	C
M Street							
- West of 13th St	2	567	0.56	A	660	0.65	B
- Between 13th St and 16th St	2	648	0.63	B	713	0.70	B
- East of 16th St	4	1,155	0.52	A	1,296	0.59	A

Segment	Travel Lanes	AM Peak Hour			PM Peak Hour		
		Vols	V/C	LOS	Vols	V/C	LOS
Martin Luther King Jr. Way							
- West of Child Ave	4	883	0.40	A	1,072	0.49	A
- Between Child Ave and 13th St	4	721	0.33	A	1,035	0.47	A
- Between 13th St and 16th St	4	787	0.36	A	1,022	0.46	A
- East of 16th St	2	276	0.27	A	426	0.42	A
G Street							
- West of 13th St	2	549	0.54	A	578	0.57	A
- Between 13th St and 16th St	4	882	0.40	A	1,027	0.46	A
- East of 16th St	4	1,387	0.63	B	1,572	0.71	C

4.9.6 Intersection Operating Conditions

Intersection turning movement volumes were collected at the study intersections around the proposed Downtown Merced HST station between 2009 and 2011; these locations are presented in Figure 4.9-1. The strategic intersections are those that are likely to be affected by any changes in traffic conditions as result of the proposed HST station. Intersection analysis was performed at these intersections for the AM and PM peak hours.

Figures 4.9-4(a), 4.9-4(b), and 4.9-4(c) present existing geometry at the study intersections and Figures 4.9-5(a), 4.9-5(b), and 4.9-5(c) present the intersection volumes for the AM and PM peak hours. Based on the geometry presented in Figure 4.9-4 and volumes presented in Figure 4.9-5, intersection analysis has been performed using the Traffix software package. The results of the analysis are presented in Table 4.9-5. Intersection turning movement counts are presented in Appendix B and LOS calculation sheets are presented in Appendix C.

It can be noted from the table that during the AM peak hour, all intersections operate at LOS D or better except for unsignalized Intersections 30, SR 99 Southbound Off-ramp at SR 140, and 31, SR 99 Northbound Off-ramp at SR 140. These intersections operate at LOS E or F during the AM peak hour under existing conditions.

In the PM peak hour, two signalized intersections operate at LOS E: Intersection 11, Olive Avenue/R Street, and Intersection 16, Olive Avenue/ M Street. All other signalized intersections operate at LOS D or better. Of the unsignalized intersections, three would operate at LOS F (Intersections 1, 16th Street/SR 59; 30, SR 99 Southbound Off-ramp/SR 140; and 31, SR 99 Northbound Off-ramp/SR 140) and one would operate at LOS E (Intersection 39, 16th Street/Canal Street). All other unsignalized intersections operate at LOS D or better under existing PM peak hour.

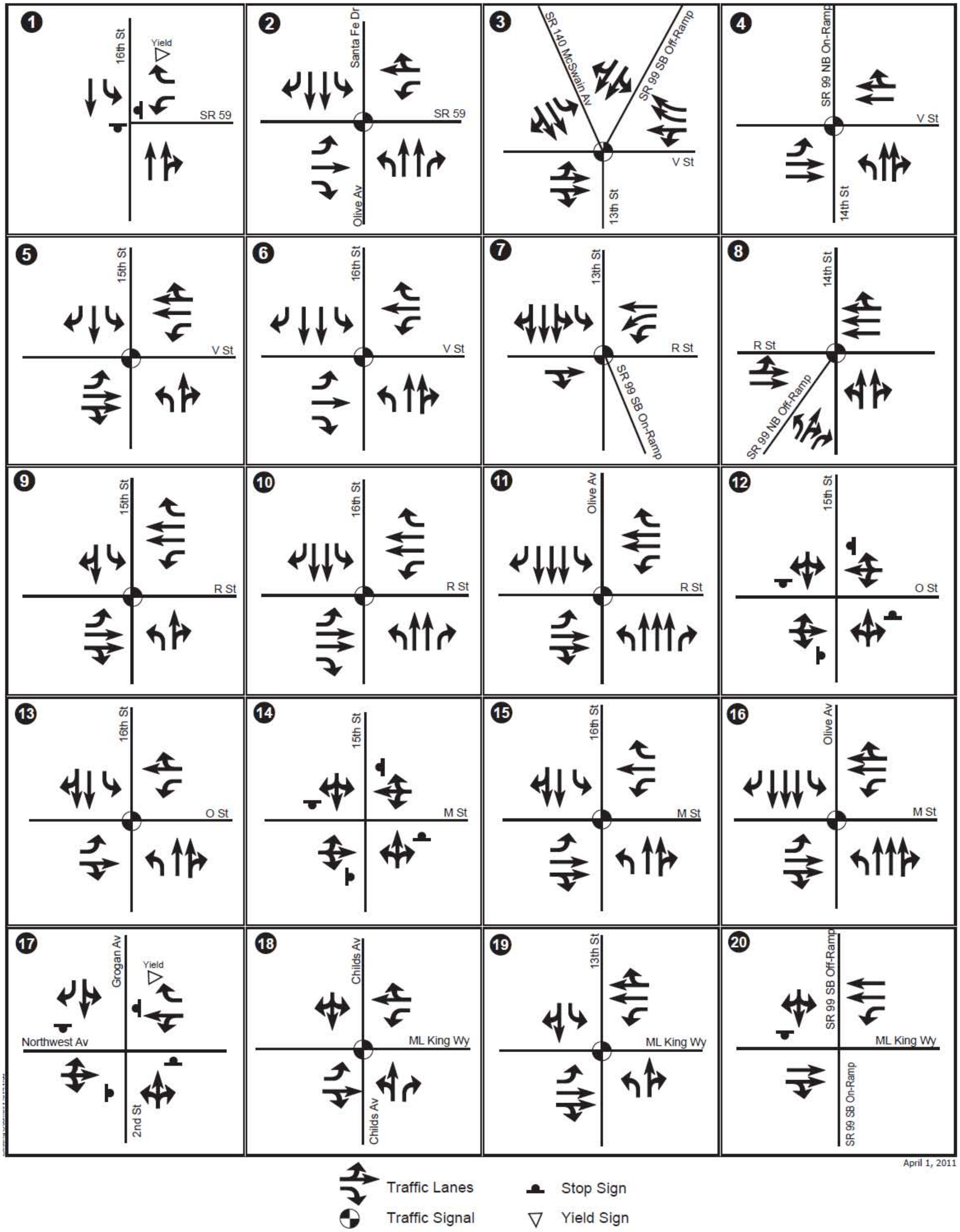


Figure 4.9-4(a)
Existing Intersection Geometry – Merced Station

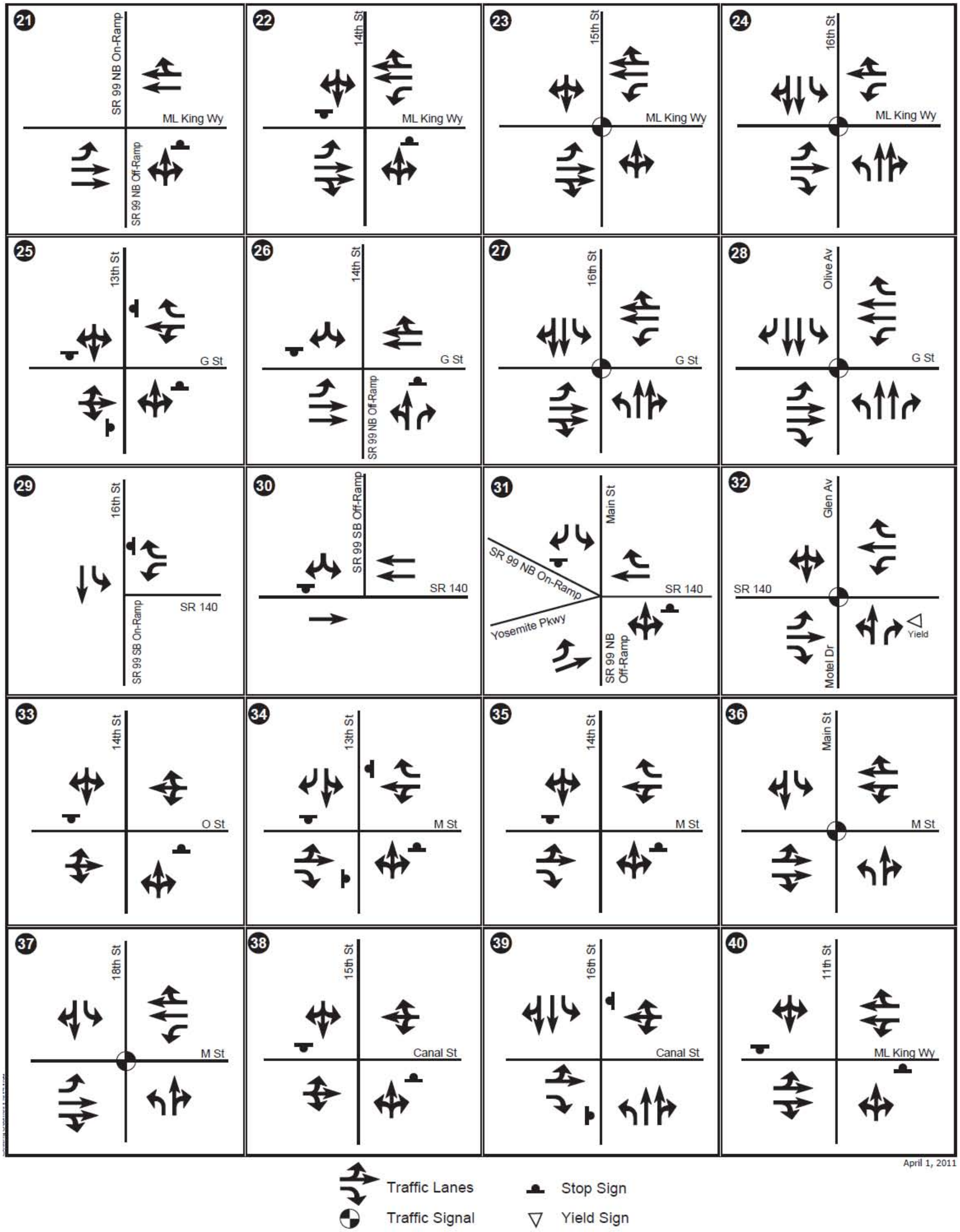


Figure 4.9-4(b)
Existing Intersection Geometry – Merced Station

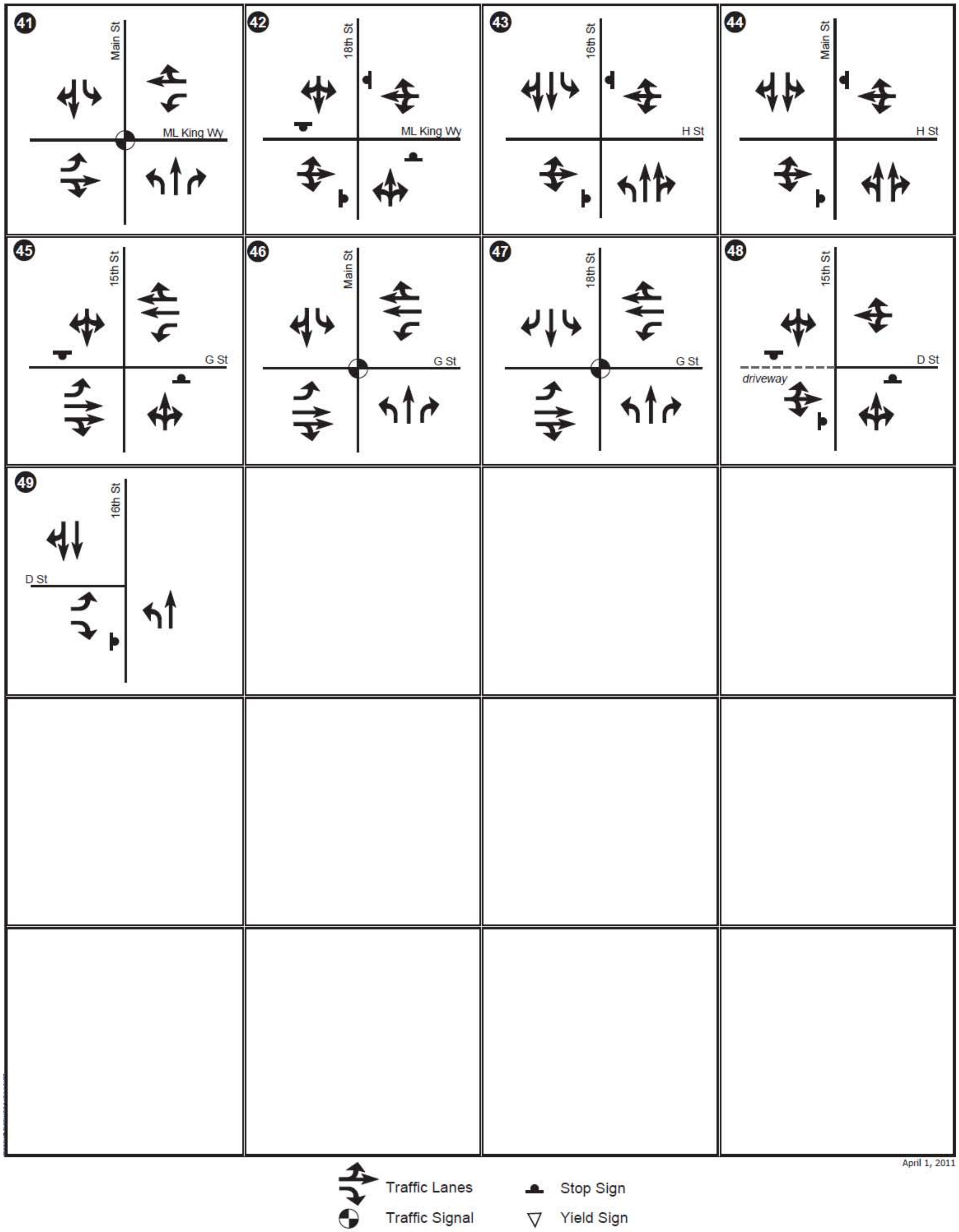
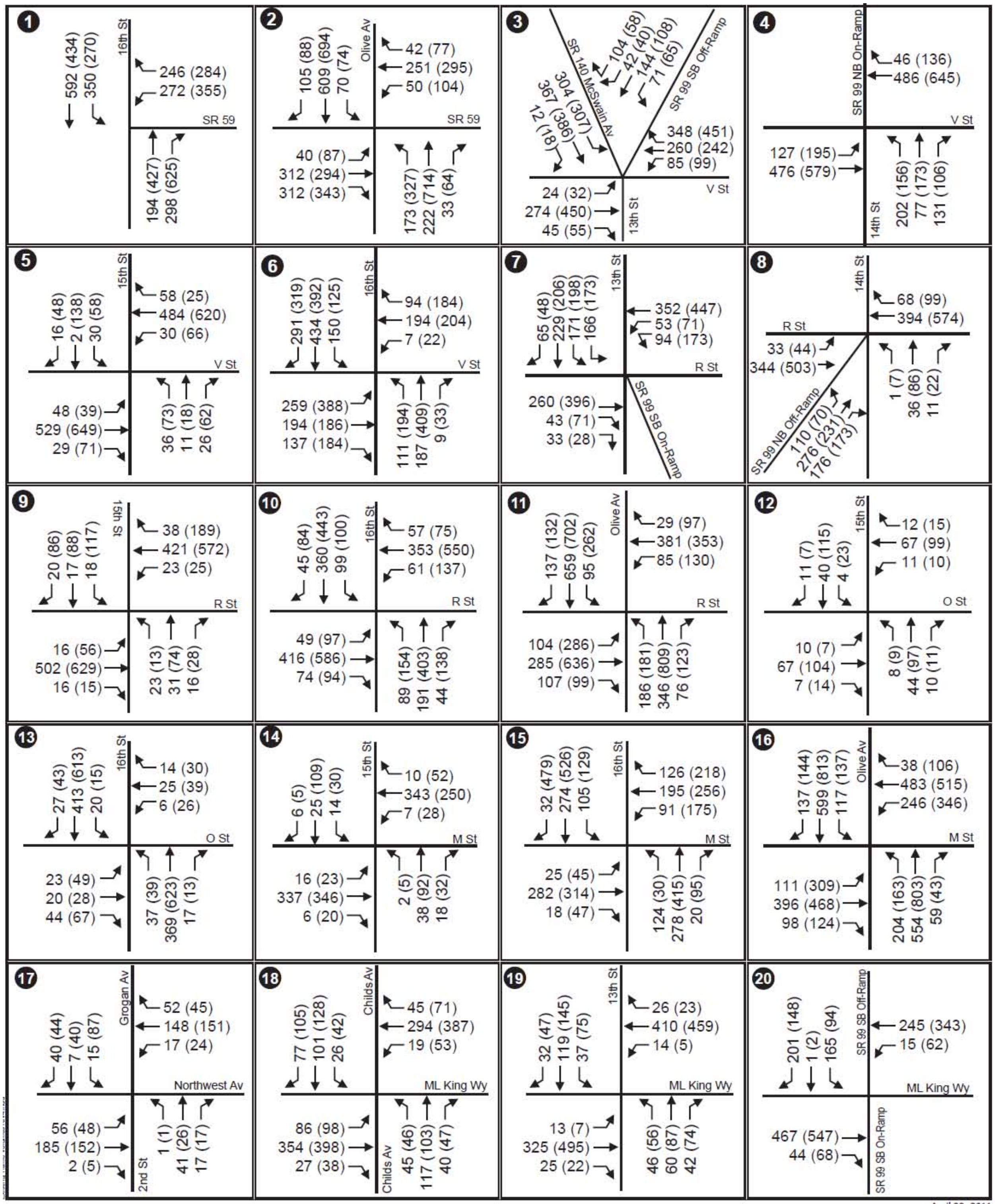
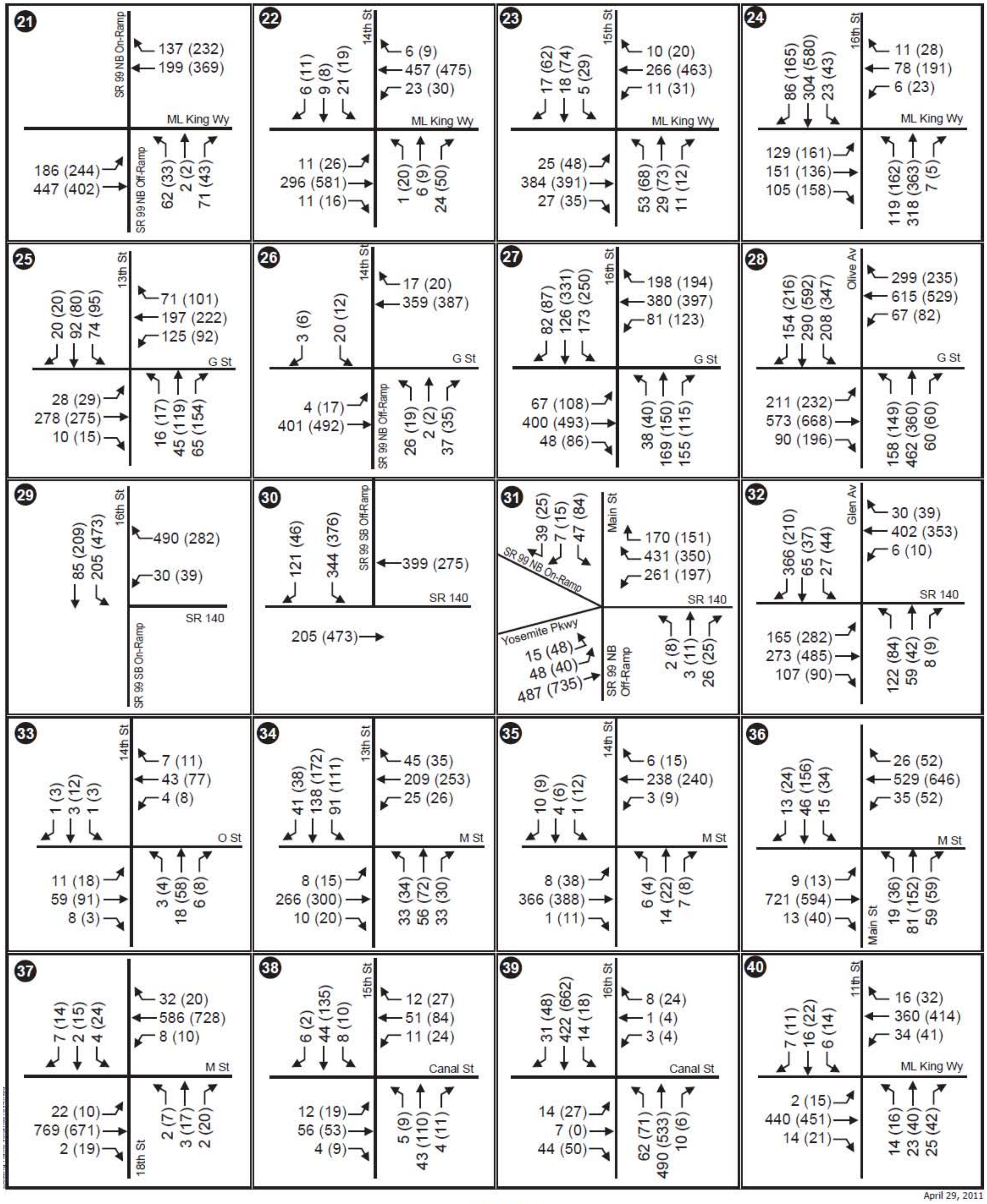


Figure 4.9-4(c)
Existing Intersection Geometry – Merced Station



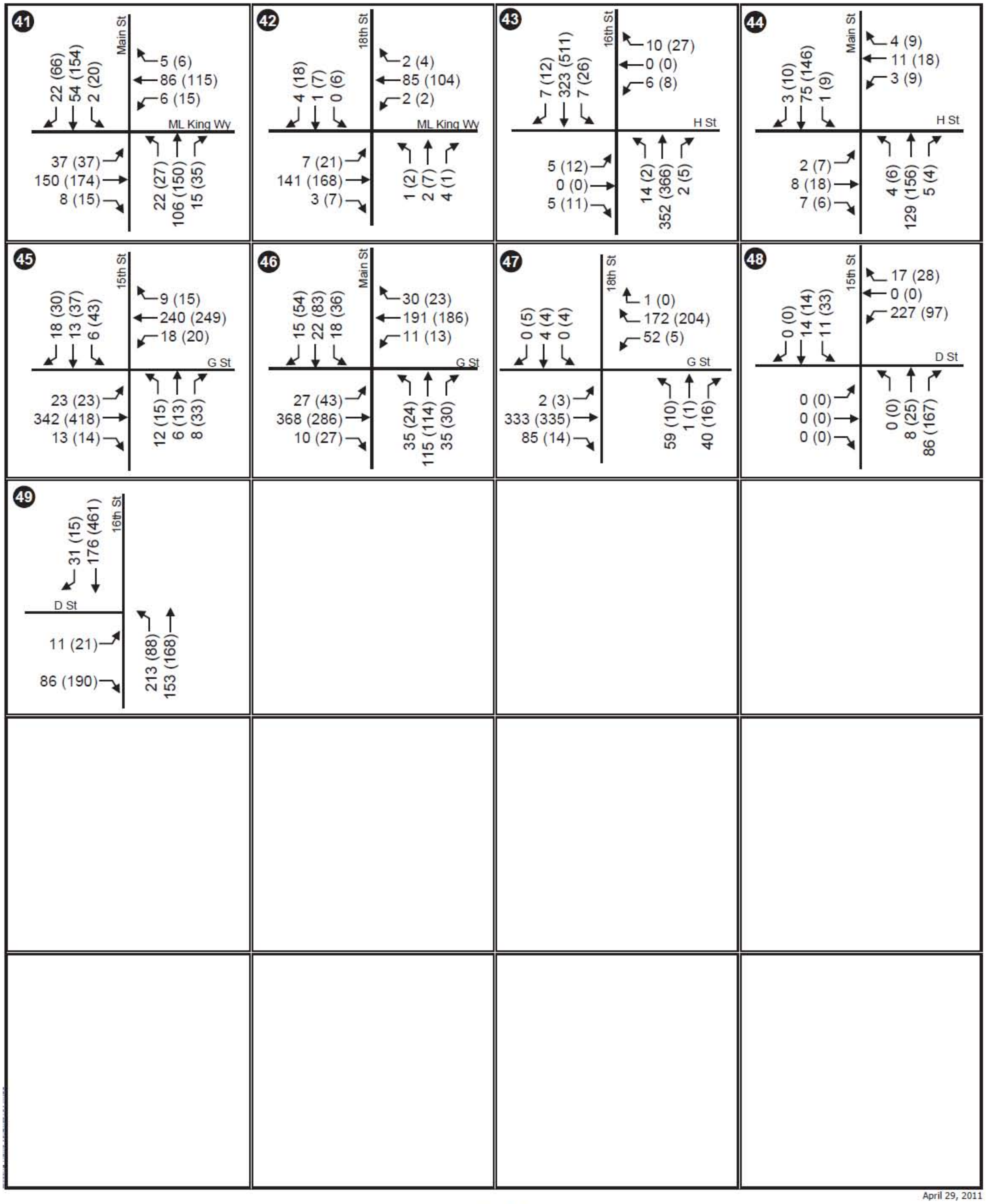
xx (xx) AM (PM) Peak Hour Volumes

Figure 4.9-5(a)
Existing Intersection Volumes – Merced Station



xx (xx) AM (PM) Peak Hour Volumes

Figure 4.9-5(b)
Existing Intersection Volumes – Merced Station



xx (xx) AM (PM) Peak Hour Volumes

Figure 4.9-5(c)
Existing Intersection Volumes – Merced Station

Table 4.9-5
Existing Intersection Operating Conditions – Downtown Merced Station

	Intersection	Intersection Control	AM Peak Hour		PM Peak Hour	
			LOS	Delay (sec)	LOS	Delay (sec)
1	16th St/SR 59	Unsignalized[a]	C	16.3	F	>50
2	Olive Ave - Santa Fe Drive/SR 59	Signalized	D	35.4	D	39.4
3	13th St - SR 99 SB Off-ramp/V St	Signalized	C	32.2	C	33.1
4	14th St - SR 99 NB On-ramp/V St	Signalized	B	18.6	B	18.0
5	15th St/V St	Signalized	B	16.7	C	25.0
6	16th St/V St	Signalized	C	21.5	C	27.0
7	13th St/R St	Signalized	B	14.3	B	15.0
8	SR 99 NB Off-ramp - 14th St/R St	Signalized	B	20.0	B	19.0
9	15th St/R St	Signalized	B	17.1	C	25.2
10	16th St/R St	Signalized	C	31.8	C	33.7
11	Olive Ave/R St	Signalized	D	50.9	E	56.2
12	15th St/O St	Unsignalized[b]	A	7.6	A	8.5
13	16th St/O St	Signalized	C	21.1	B	19.8
14	15th St/M St	Unsignalized[b]	B	11.0	B	12.7
15	16th St/M St	Signalized	C	32.9	C	33.7
16	Olive Ave/M St	Signalized	D	54.5	E	58.6
17	2nd St-Grogan Ave/Northwest Ave	Unsignalized[b]	A	9.8	B	10.0
18	Childs Ave/Martin Luther King Jr. Way	Signalized	D	39.2	D	41.2
19	13th St/Martin Luther King Jr. Way	Signalized	C	25.7	C	27.4
20	SR 99 SB Ramps/Martin Luther King Jr. Way	Unsignalized[a]	C	17.2	C	17.5
21	SR 99 NB Ramps/Martin Luther King Jr. Way	Unsignalized[a]	C	19.8	C	21.3
22	14th St/Martin Luther King Jr. Way	Unsignalized[a]	C	16.6	C	21.8
23	15th St/Martin Luther King Jr. Way	Signalized	B	12.4	B	14.8
24	16th St/Martin Luther King Jr. Way	Signalized	C	29.1	C	31.2
25	13th St/G St	Unsignalized[b]	B	12.9	C	15.4
26	SR 99 - 14th St/G St	Unsignalized[a]	B	15.0	C	17.5
27	16th St/G St	Signalized	C	31.4	C	32.8
28	Olive Ave/G St	Signalized	D	46.8	D	48.0

	Intersection	Intersection Control	AM Peak Hour		PM Peak Hour	
			LOS	Delay (sec)	LOS	Delay (sec)
29	SR 99 SB On-ramp/SR 140	Unsignalized[a]	B	12.9	D	32.3
30	SR 99 SB Off-ramp/SR 140	Unsignalized[a]	E	43.9	F	>50
31	SR 99 NB Off-ramp/SR 140	Unsignalized[a]	F	>50	F	>50
32	Motel Drive-Glen Ave/SR 140	Signalized	D	42.6	D	36.9
33	14th St / O St	Unsignalized[a]	A	9.7	B	10.8
34	13th St / M St	Unsignalized[b]	B	12.7	C	15.8
35	14th St / M St	Unsignalized[a]	B	13.7	C	15.5
36	Main St / M St	Signalized	A	9.7	B	13.2
37	18th St / M St	Signalized	B	12.2	B	13.5
38	15th St / Canal St	Unsignalized[a]	B	10.3	B	12.3
39	16th St / Canal St	Unsignalized[a]	C	22.2	E	36.7
40	11th St / Martin Luther King Jr. Way	Unsignalized[a]	C	16.8	C	21.0
41	Main St / Martin Luther King Jr. Way	Signalized	A	9.5	A	9.9
42	18th St / Martin Luther King Jr. Way	Unsignalized[b]	A	7.7	A	8.0
43	16th St / H St	Unsignalized[a]	B	11.5	B	14.4
44	Main St / H St	Unsignalized[a]	A	10.0	B	10.9
45	15th St / G St	Unsignalized[a]	B	13.4	C	16.7
46	Main St / G St	Signalized	B	16.8	C	20.1
47	18th St / G St	Signalized	A	8.5	A	4.5
48	15th St / D St	Unsignalized[a]	B	14.3	B	11.5
49	16th St / D St	Unsignalized[a]	C	16.4	C	16.7

[a] One-way or two-way stop controlled intersection. LOS and delay reported for the worst movement.
[b] All-way stop controlled intersection, average delay reported.

4.9.7 Existing Pedestrian Facilities

The pedestrian facilities around the proposed Merced station include the sidewalk system on the nearby streets. There are no separate pedestrian paths or trails from the nearby neighborhoods. The downtown area is generally well connected with the sidewalk system as shown in Figure 4.9-6. Sidewalks are available on both sides along 16th Street and crosswalks are provided for pedestrian movements at most of the intersections along 16th Street. Sidewalks are provided on other major streets in the vicinity, such as 15th Street, R Street, M Street, O Street, and G Street.

4.9.8 Existing Bicycle Facilities

The City of Merced has a comprehensive bikeway system consisting of Class I, Class II, and Class III bicycle facilities (defined below) (MCAG 2008). Existing bicycle facilities in the City of Merced are shown in Figure 4.9-7.

- Class I bicycle facilities are off-street bicycle paths – Existing Class I bicycle paths are located along Bear Creek, Black Rascal Creek, Cottonwood Creek, and Fahrens Creek.
- Class II bicycle facilities are on-street, marked bicycle lanes – Existing Class II bicycle lanes are provided on major sections of the arterial streets including G Street, M Street, Yosemite Avenue, and McKee Road. Class II bicycle lanes are also provided on shorter sections of R Street, V Street, West Avenue, 17th Street, 18th Street, and 21st Street.
- Class III bicycle facilities are on-street, shared-use bicycle routes – Existing Class III bicycle routes are provided on sections of collector and arterial streets, including V Street, 26th Street, Glen Avenue, and Childs Avenue.

4.9.9 Existing Parking Facilities

Through its Downtown Parking District, the City of Merced provides approximately 2,100 public parking spaces within a walking distance of 0.5 mile from the proposed downtown station. They include on-street parking, surface parking lots, and two garages. Figure 4.9-8 shows the locations of parking facilities near the proposed HST station. Parking is generally free, with time restrictions based on time of day or day of the week. Field surveys in December 2009 assessed current occupancy. The results are summarized in Table 4.9-6.

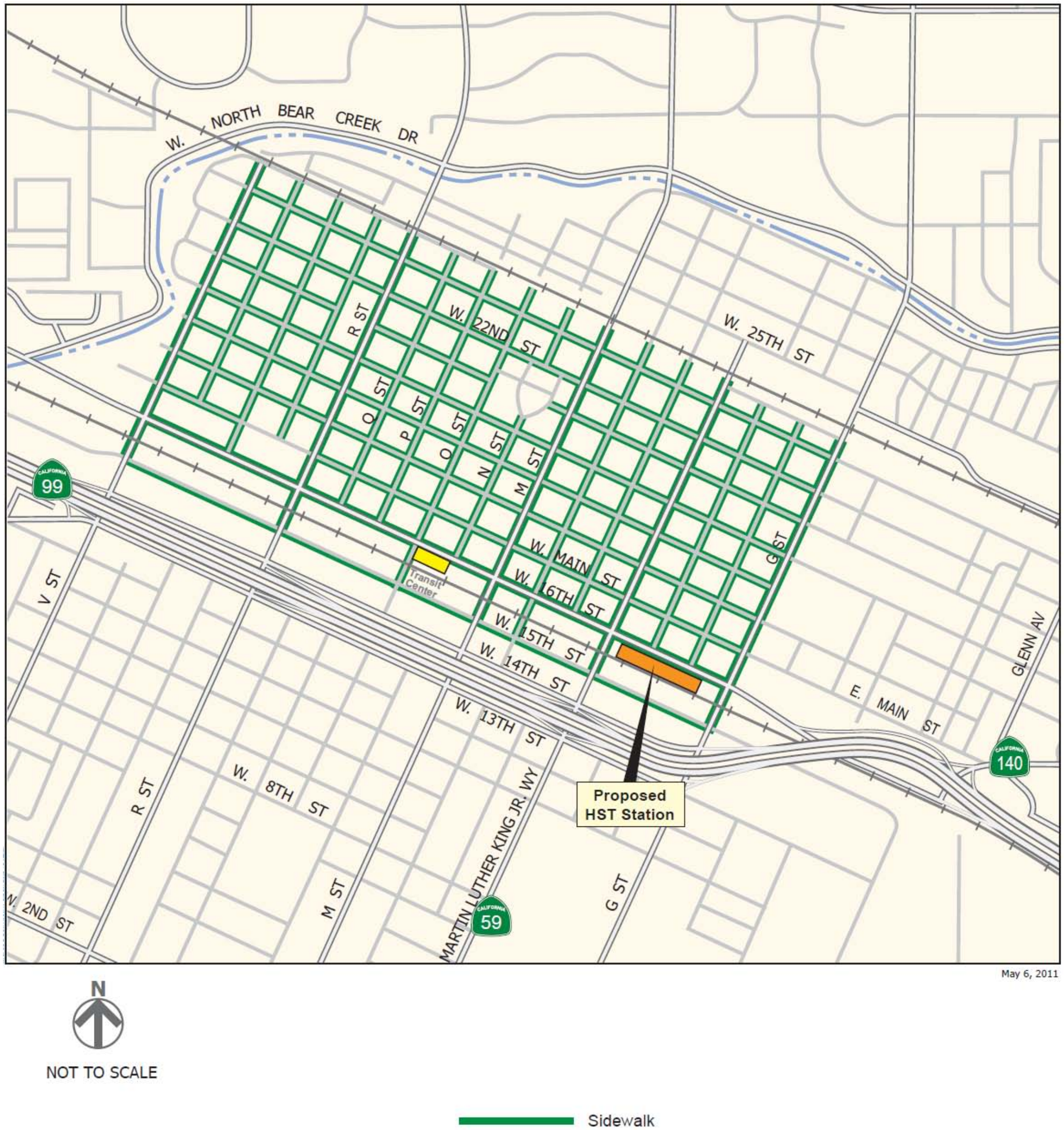


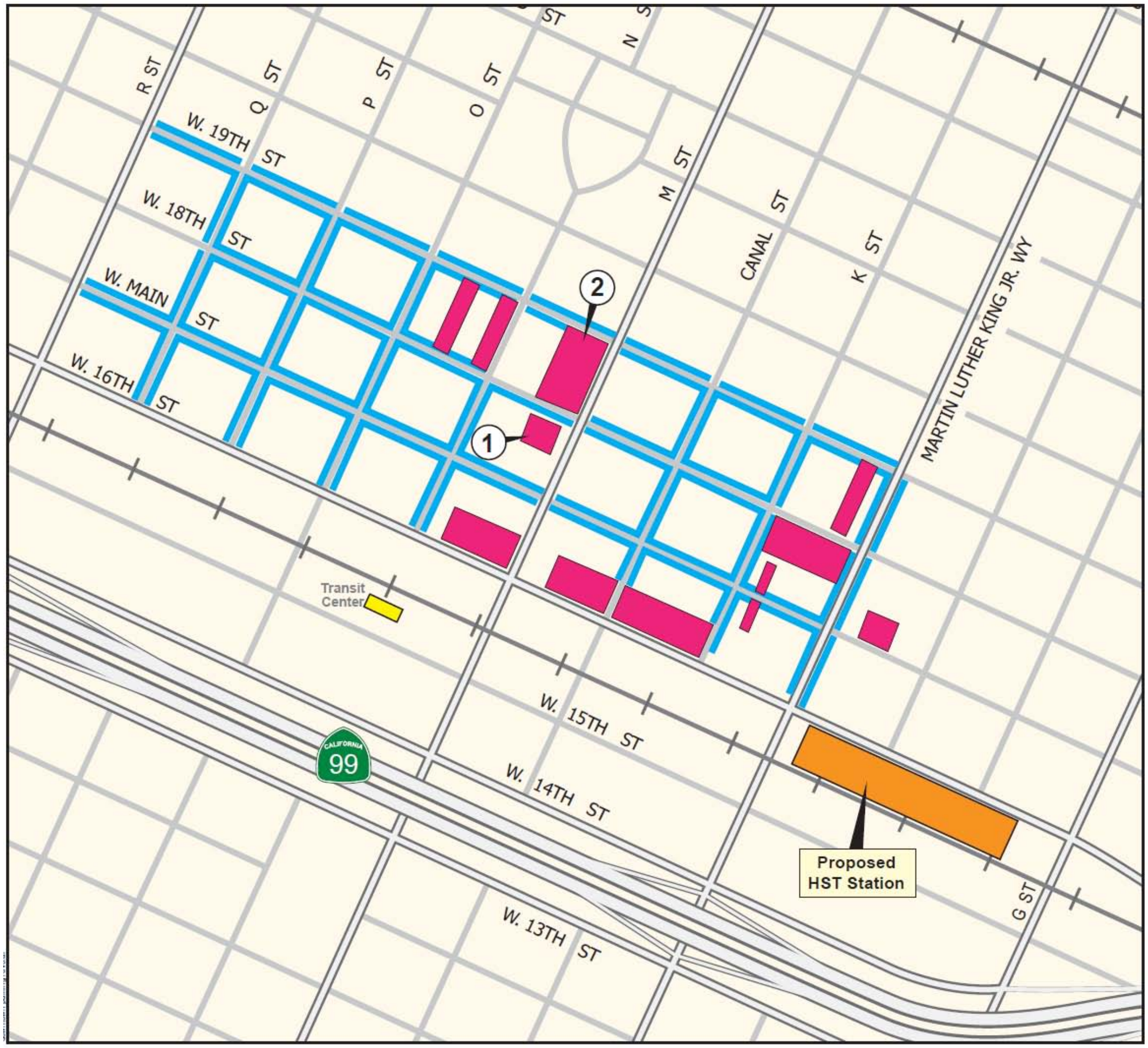
Figure 4.9-6
Existing Pedestrian Facilities in Downtown Merced

Figure 4.9-7
Existing Bicycle Facilities – Merced Station

Table 4.9-6
Parking within 0.5 mile of the Proposed Merced HST Station

Parking Category	Total Spaces	Spaces Used[a]	Net Available Spaces	% Utilization
Public parking spaces (surface)	669	357	312	53.4%
Public parking spaces (structure)	512	116	396	22.7%
On-street within parking district	437	215	222	49.2%
On-street outside parking district	533	168	365	31.5%
Total spaces within 0.5 mile	2,151	856	1,295	39.8%
Time restricted spaces in parking lots	596	258	338	43.3%
Time restricted on-street parking spaces	305	171	134	56.1%
Unrestricted spaces	1,250	427	823	34.2%

Note:
[a] Per data collection by AECOM in December 2009.



N

NOT TO SCALE

Off-Street Public Parking (Surface lots unless noted below)

1 Parcade parking structure

2 Merced Center parking structure

On-Street Parking

Source: City of Merced (2011b)

Figure 4.9-8
Existing Parking Facilities in Downtown Merced

4.9.10 Fresno Station Traffic Study Area

The study area for the proposed Fresno HST station was developed through discussions with staff from City of Fresno. One hundred-four intersections were identified for analysis in this report. The study intersections are listed below. The study intersections are illustrated in Figures 4.9-9a and 4.9-9b.

Study Intersections

1) Broadway Street/SR 41 Northbound Ramp/Monterey Street
2) Van Ness Avenue/SR 41 Northbound Ramp
3) Broadway Street/SR 41 Southbound Ramp
4) Van Ness Avenue/SR 41 Southbound Ramp
5) SR 99 Southbound Ramps/Ventura Avenue
6) SR 99 Northbound Ramps/Ventura Avenue
7) E Street/Ventura Avenue
8) G Street/Ventura Avenue
9) Broadway Street/Ventura Avenue
10) Van Ness Avenue/Ventura Street
11) M Street/Ventura Avenue
12) Street/Ventura Avenue
13) P Street/Ventura Avenue
14) N 1st Street/Ventura Avenue
15) G Street/Inyo Street
16) H Street/ Inyo Street
17) Van Ness Avenue/Inyo Street
18) M Street/Inyo Street
19) P Street/Inyo Street
20) G Street/Kern Street
21) H Street/Kern Street
22) E Street/Tulare Street
23) F Street/Tulare Street
24) G Street/Tulare Street
25) H Street/Tulare Street
26) Van Ness Avenue/Tulare Street
27) M Street/Tulare Street
28) P Street/Tulare Street
29) R Street/Tulare Street
30) U Street/Tulare Street
31) Divisadero Street Off-ramp/Tulare Street
32) SR 41 Southbound Ramp/Divisadero Street
33) SR 41 Northbound Ramps/Tulare Street
33-0) Divisadero Street/SR 41 Northbound Ramps/Tulare Street
34) N 1st Street/Tulare Street
35) H Street/Mariposa Street/Fresno Ramps
36) C Street/Fresno Street
37) SR 99 Southbound Ramps/Fresno Street
38) SR 99 Northbound Ramps/Fresno Street
39) G Street/Fresno Street
40) H Street/Fresno Street
41) Broadway Street/Fresno Street
42) Van Ness Avenue/Fresno Street
43) M Street/Fresno Street
44) P Street/Fresno Street
45) Fresno Street/R Street
46) Fresno Street/Divisadero Street
47) H Street/Broadway Street
48) E Street/Tuolumne Street
49) Broadway Street/Tuolumne Street
50) Van Ness Avenue/Tuolumne Street
51) Street/Tuolumne Street
52) E Street/Stanislaus Street
53) Broadway Street/Stanislaus Street
54) Van Ness Avenue/Stanislaus Street
55) N Blackstone Avenue/Stanislaus Street
56) N Abby Street/E Divisadero Street
57) N Blackstone Avenue/Divisadero Street
58) H Street/San Joaquin Street
59) M Street/Divisadero Street
60) H Street/Amador Street
61) G Street/Divisadero Street
62) N Roosevelt Avenue/E Divisadero Avenue
63) H Street/Divisadero Street

64) Broadway Street/Divisadero Street
65) Fulton Street/Divisadero Street
66) Van Ness Avenue/Divisadero Street
67) H Street/Roosevelt Street
68) N Blackstone Avenue/E Mckenzie Avenue
69) N Abby Street/E Mckenzie Avenue
70) Fulton Street/CA 180 Eastbound Ramps
71) Van Ness Avenue/CA 180 Eastbound Ramps
72) Fulton Street/180 Westbound Ramps
73) Van Ness Avenue/CA 180 Westbound Ramps
74) N. Blackstone Avenue/E Belmont Avenue
75) N Abby Street/E Belmont Street
76) Fresno Street/E Belmont Street
77) N 1st Street/E Belmont Street
78) N Blackstone Avenue/CA 180 Eastbound Ramps
79) N Abby Street/CA 180 Eastbound Ramps
80) N Blackstone Avenue/CA 180 Westbound Ramps
81) Broadway Street/Amador Street
82) Broadway Street/San Joaquin Street
83) F Street/Fresno Street
84) G Street/Mono Street
85) H Street/Mono Street
86) H Street/Ventura Street
87) Street/Santa Clara Street – SR 41 SB Off-ramp
88) M Street/SR 41 Southbound On-ramp
89) M Street/San Benito – SR 41 NB On-ramp
90) Broadway Street/Santa Clara Street
91) Van Ness Avenue/E Hamilton Avenue
92) S Van Ness Ave/E California Ave
93) S Railroad Ave/E Lorena Ave
94) S Van Ness Ave/S Railroad Ave
95) S Railroad Ave/E Florence Ave
96) Golden State Blvd/E Church Ave
97) S Railroad Ave/E Church Ave
98) S East Ave/E Church Ave
99) S Sunland Ave/E Church Ave
100) S East Ave/S Railroad Ave
101) S East Ave/Golden State Blvd
102) Golden State Blvd/E Jensen Ave
103) S Railroad Ave/S Orange Ave
104) S Golden State Blvd/S Orange Ave

4.9.11 Existing Transit

The proposed Fresno station study area is served by Amtrak rail service, as well as bus service offered by FAX, Greyhound Bus Lines, Fresno County Rural Transit Agency, Fresno County Economic Opportunities Commission, and numerous private taxi services. The City of Fresno, through FAX, provides municipal public transportation services around the proposed Fresno station.

FAX includes 20 fixed-route bus lines and paratransit service, serving the greater Fresno Metropolitan Area with a fleet of over 100 buses (City of Fresno 2007), as shown in Figure 4.9-10. The existing routes that serve the proposed HST station are also shown on Figure 4.9-10 and are summarized in Table 4.9-7, along with weekday headways.

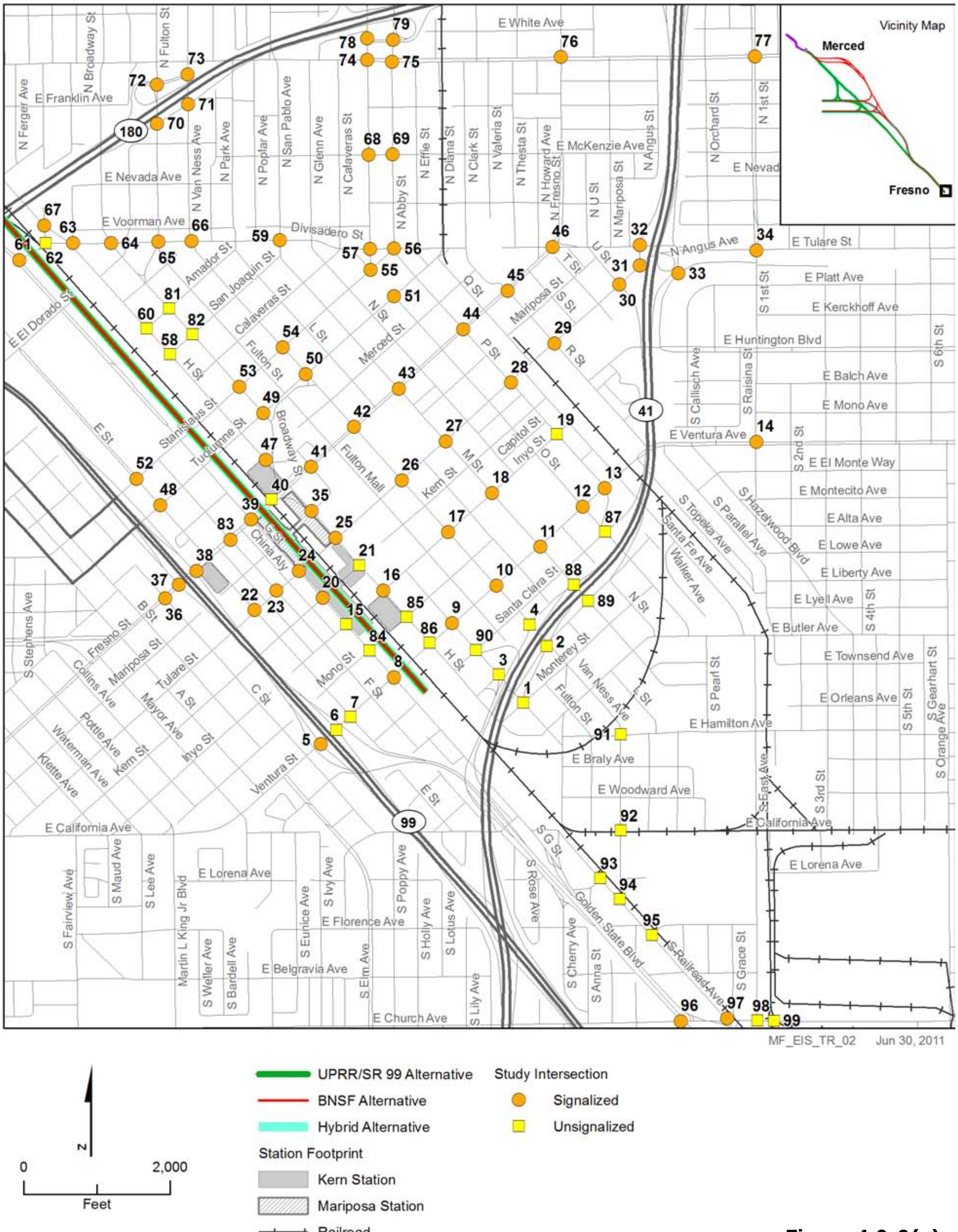


Figure 4.9-9(a)
Study Intersections in Northern Portion of Downtown Fresno

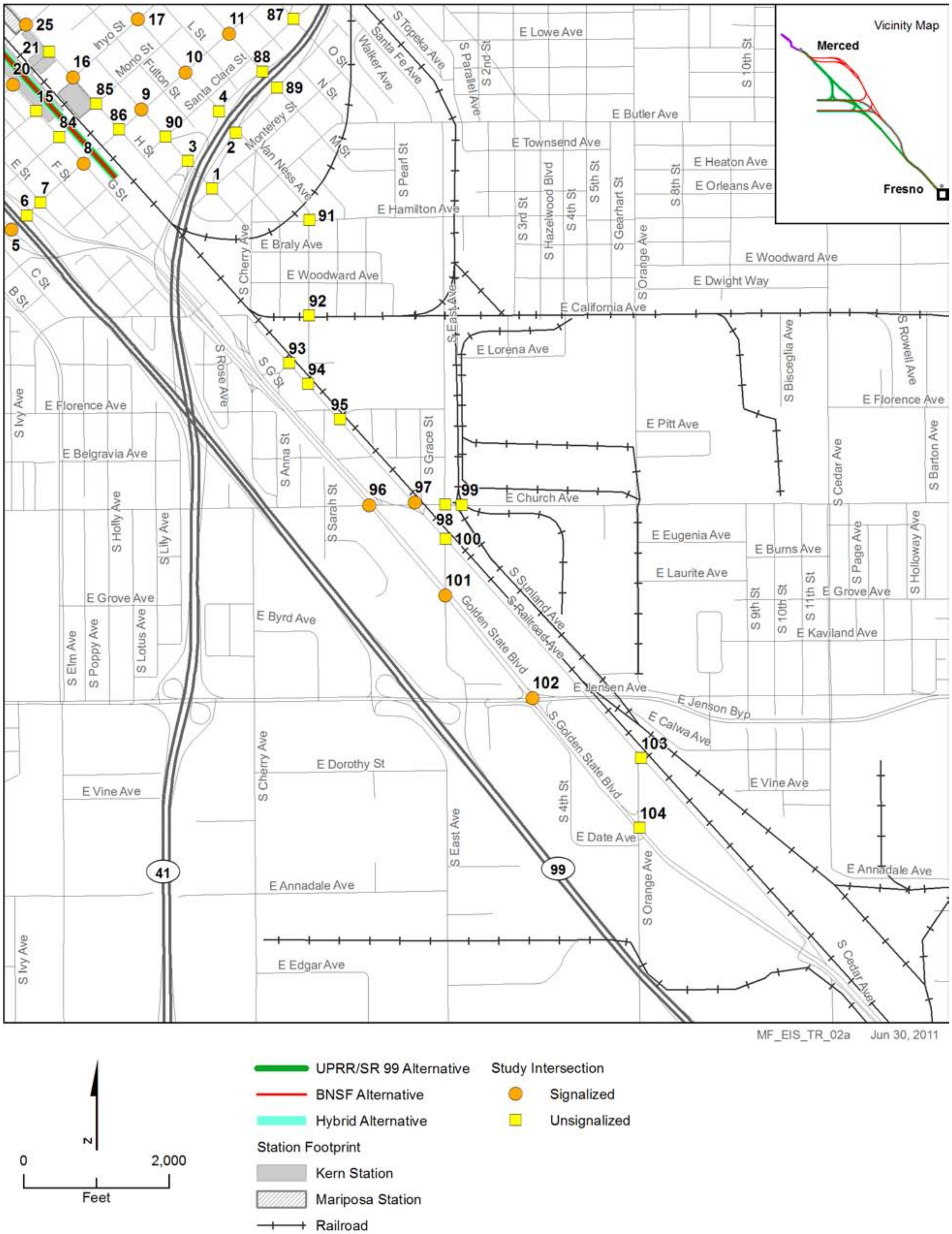


Figure 4.9-9(b)
Study Intersections in Southern Portion of Downtown Fresno

Table 4.9-7
FAX Weekday Service Frequency

Bus Routes – Fresno	Headways (min)Weekdays
Route 20 - N Hughes/N Marks/E Olive	30
Route 22 – N West Ave./E Tulare Avenue	30
Route 26 - N Palm/Peach Avenue	30
Route 28 - CSUF/Manchester Center/W Fresno	15
Route 30 - Pinedale/N Blackstone/W Fresno	15
Route 32 - N Fresno/Manchester Center/W Fresno	30
Route 33 - Olive/Belmont Crosstown	30
Route 34 – Northeast Fresno/N First/W Fresno	15
Route 35 - Olive Crosstown	30
Route 38 – N Cedar/Jensen/Hinton Center	15
Route 39 - Clinton Avenue Crosstown	30
Route 41 - N Marks Avenue/Shields Avenue/VMC	30
Route 45 - Ashlan Crosstown	60

4.9.12 Roadway Operating Conditions

An analysis of existing roadway segments daily operating conditions was conducted based on the Florida Tables. In all, 41 roadway segments were identified for analysis. The purpose of conducting the roadway segment analysis is to determine whether the roadways are currently adequate and to provide a baseline for future comparison of the roadway segments. The roadway segments to be analyzed were determined based on major roadways that are expected to be used for ingress and egress to the Fresno HST station. ADT volumes were collected at the study roadway segments during November 2009 and were evaluated based on the roadway capacities identified in the Florida Tables. Roadway segment analysis results are summarized in Table 4.9-8. As indicated in the table, all roadway segments analyzed operate at LOS D or better under existing conditions, except the roadway segment on Tulare Street between the SR 41 ramps and N First Street, which operates at LOS F.

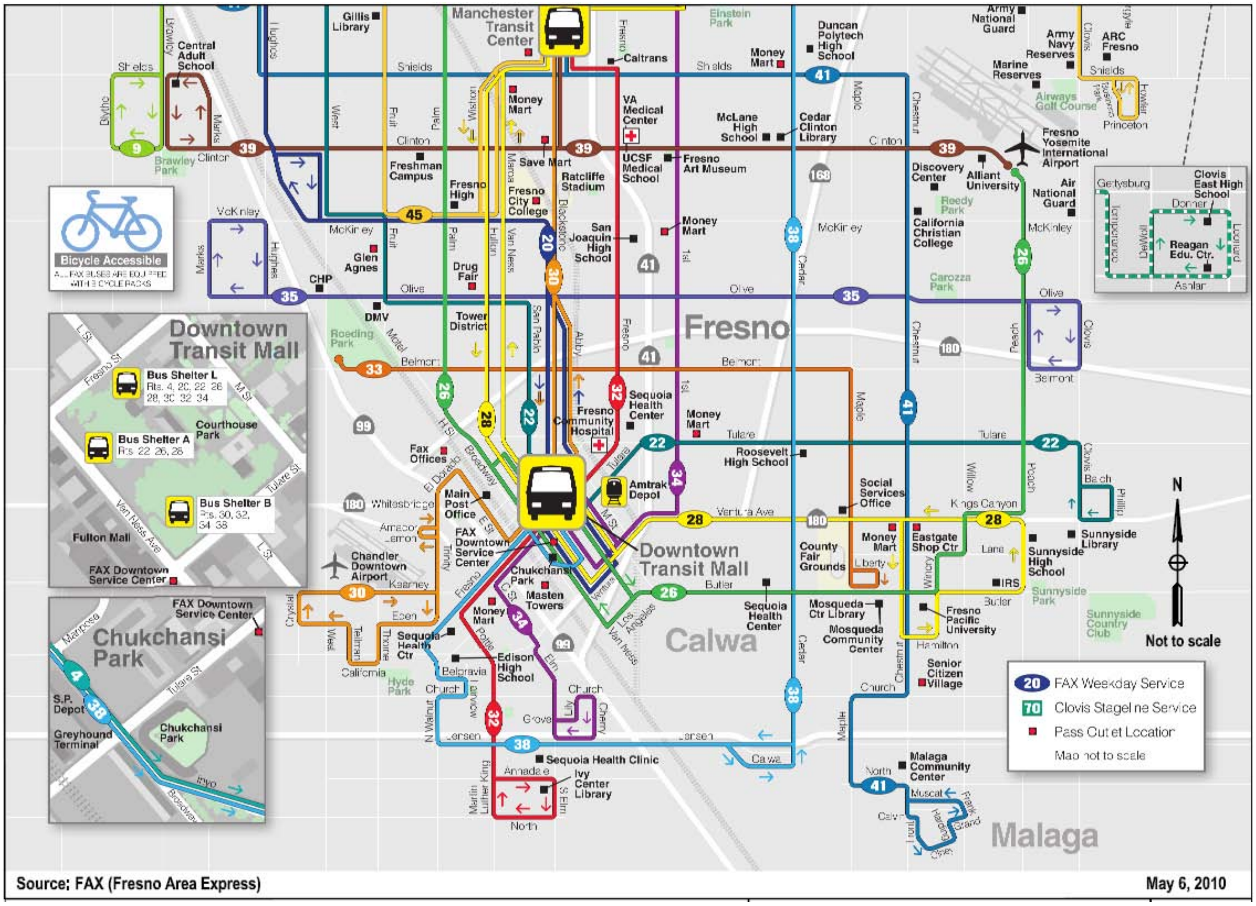


Figure 4.9-10
Existing Transit Facilities – Fresno Station

Table 4.9-8
Existing Roadway Segment Analysis – Downtown Fresno Station

No.	Roadway Segment	ADT	Number of Lanes (N/E or S/W)	Divided/ Undivided	LOS
1	Fulton St, between CA 180 Eastbound Ramps and E Divisadero St	6,970	0/2	One-Way	D
2	Van Ness Ave, between CA 180 Eastbound Ramps and E Divisadero St	5,204	2/0	One-Way	C
3	E Divisadero St, between H St and Broadway St	9,014	2/2	Undivided	C
4	H St, between E Divisadero St and Stanislaus St	4,120	1/1	Undivided	C
5	Broadway St, between San Joaquin St and Stanislaus St	1,916	1/2	Undivided	C
6	Van Ness Ave, between Stanislaus St and E Divisadero St	5,262	1/1	Divided/Undivided	D/C
7	Stanislaus St, between Van Ness Ave and O St	4,360	0/3	One-Way	C
8	N Blackstone Ave, between Mckenzie Ave and E Belmont Ave	8,074	0/3	One-Way	C
9	N Abby St, between Mckenzie Ave and E Belmont Ave	9,036	3/0	One-Way	C
10	E Belmont Ave, between N Fresno St and N Abby St	12,080	2/2	Divided	C
11	Stanislaus St, between Broadway St and E St	6,996	0/2 before F Street and 0/3 after F Street	One-Way	D/C
12	Tuolumne St, between Broadway St and E St	5,586	2/0 before F Street and 3/0 after F Street	One-Way	C
13	Tuolumne St, between Van Ness Ave and O St	4,300	3/0	One-Way	C
14	Fresno St, between P St and M St	12,322	2/2	Divided	D
15	Fresno St, between M St and Van Ness Ave	12,150	2/2	Divided	C
16	Fresno St, between Van Ness Ave and Broadway St	13,250	2/2	Divided	D
17	Fresno St, between G St and SR 99 Northbound Ramps	16,082	2/2	Divided	D
18	Fresno St, between C St and B St	11,860	2/2	Divided	C
19	Van Ness Ave, between Fresno St and Tulare St	9,992	2/1	Undivided	D
20	Tulare St, between Broadway St and Van Ness Ave	7,174	2/2	Divided	C
21	Tulare St, between R St and U St	19,910	2/2	Undivided	D

No.	Roadway Segment	ADT	Number of Lanes (N/E or S/W)	Divided/ Undivided	LOS
22	Divisadero St, between N Fresno St and SR 41 Ramps	20,338	2/2	Divided/Undivided	D
23	Tulare St, between SR 41 Ramps and N First St	32,476	2/2	Divided/Undivided	F
24	M St, between Tulare St and Inyo St	4,000	0/3	One-Way	C
25	Inyo St, between Broadway St and Van Ness Ave	3,302	1/1	Undivided	C
26	Van Ness Ave, between Inyo St and Ventura Ave	7,586	1/1	Undivided	D
27	P St, between Inyo St and Ventura Ave	2,018	2/0	One-Way	C
28	Ventura Ave, between B St and C St	13,886	2/2	Divided	D
29	Ventura Ave, between E St and G St	14,320	2/2	Undivided	D
30	Broadway St, between Ventura Ave and SR 41 Ramps	3,438	1/2 before Santa Clara Street 1/3 after Santa Clara Street	Undivided	C
31	Van Ness Ave, between Ventura Ave and SR 41 Ramps	9,346	1/1	Undivided	D
32	Ventura Ave, between M St and Van Ness Ave	11,838	2/2	Divided	C
33	Ventura Ave, between P St and N First St	11,500	2/2	Undivided	D
34	N Blackstone Ave, between SR 180 Eastbound Ramps and E Belmont Ave	12,774	0/3	One-Way	D
35	N Abby St, between SR 180 Eastbound Ramps and E Belmont Ave	12,906	3/0	One-Way	D
36	Divisadero St between G St and H St	7,231	2/1	Undivided	C
37	Kern St between G St and H St	1,416	1/1	Undivided	C
38	Mono St between G St and H St	510	1/1	Undivided	C
39	S Railroad Ave between E Florence Ave and E Church Ave	2,931	1/1	Undivided	C
40	S Railroad Ave between E Church Ave and E Jensen Ave	2,094	1/1	Undivided	C
41	S Orange Ave between S Railroad Ave and Golden State Blvd	956	1/1	Undivided	C

Acronyms and Abbreviations:

ADT	average daily traffic
AM	morning
CA	California
E	east
LOS	level of service
N	north
PM	afternoon
SR	State Route

4.9.13 Intersection Operating Conditions

Intersection turning movement volumes were collected at study intersections around the proposed Downtown Fresno HST station in November 2009. These locations are presented in Figure 4.9-9. Intersection analysis was performed at the selected intersections for the AM and PM peak hours.

Figures 4.9-11(a) through 4.9-11(f) present existing geometry at the study intersections and Figures 4.9-12(a) through 4.9-12(f) present the intersection volumes for the AM and PM peak hours.

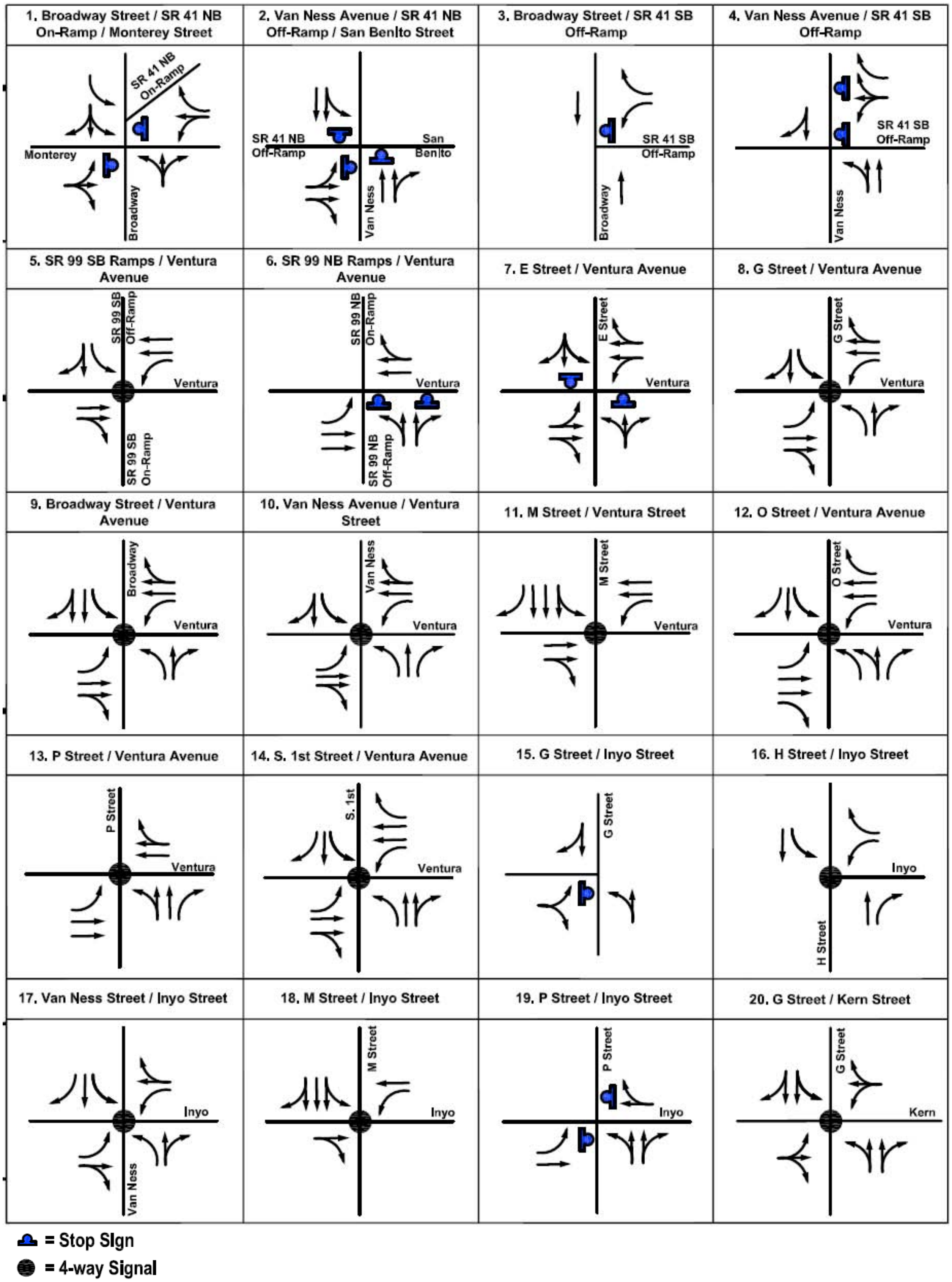
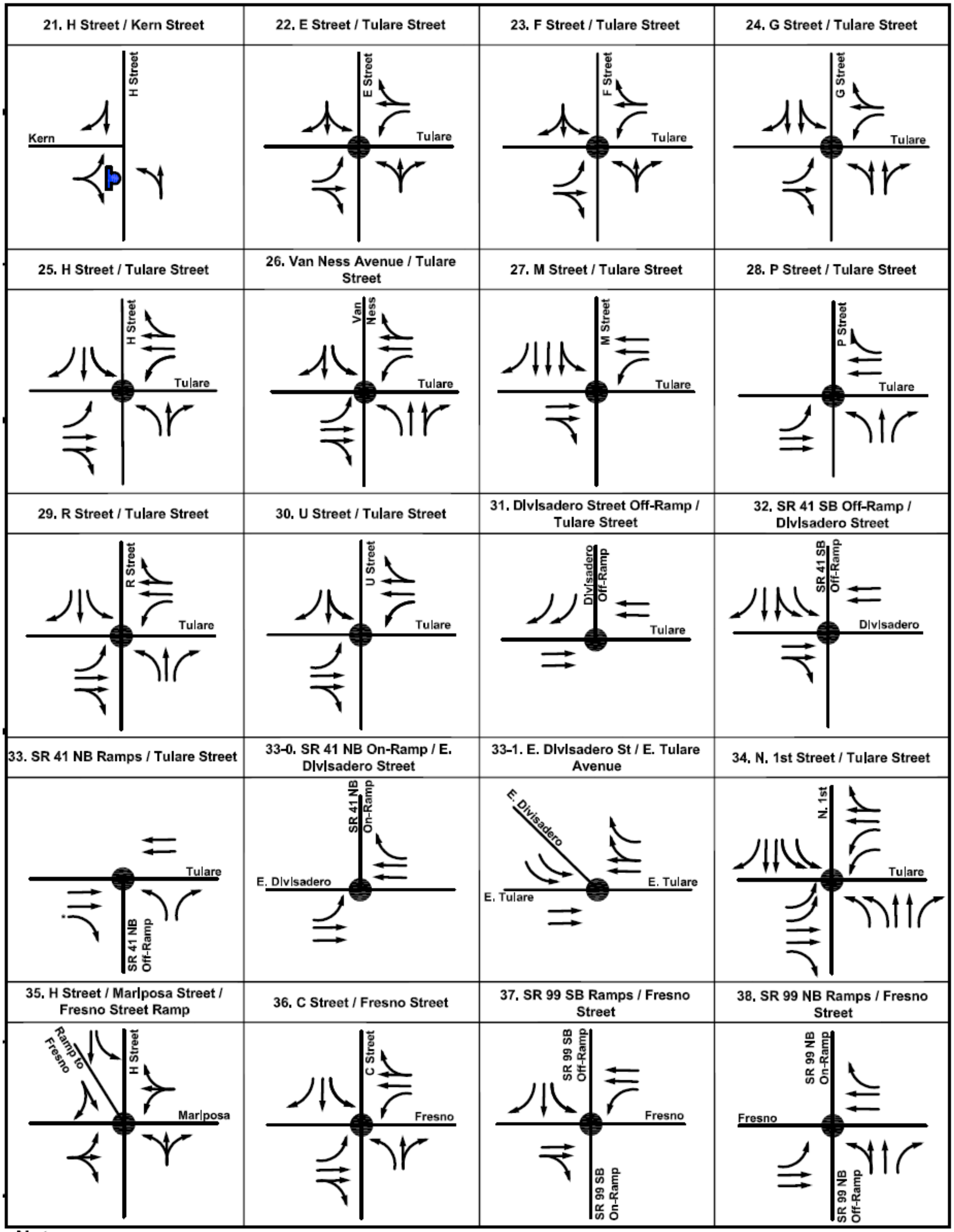
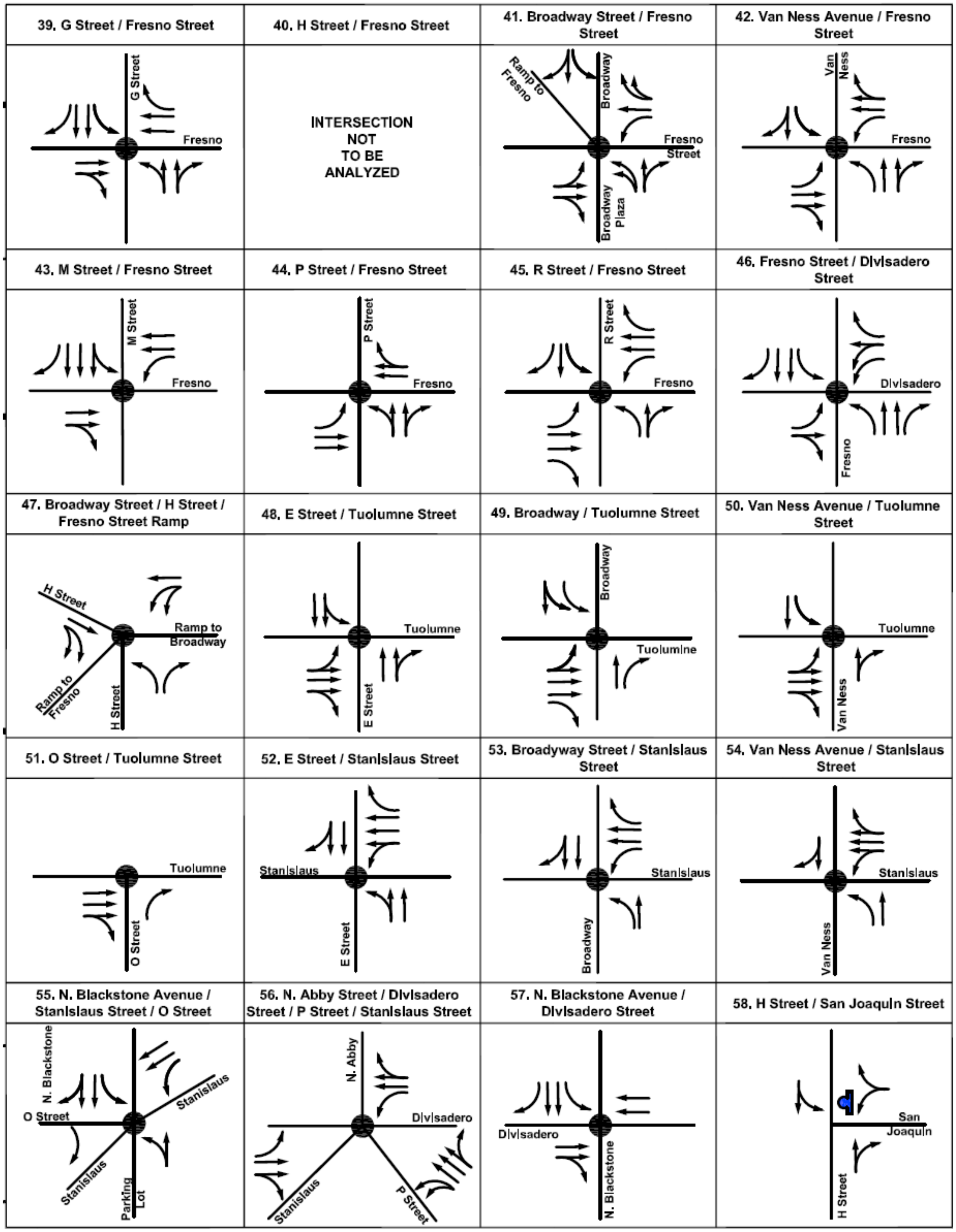


Figure 4.9-11(a)
Existing Intersection Geometry – Fresno Station



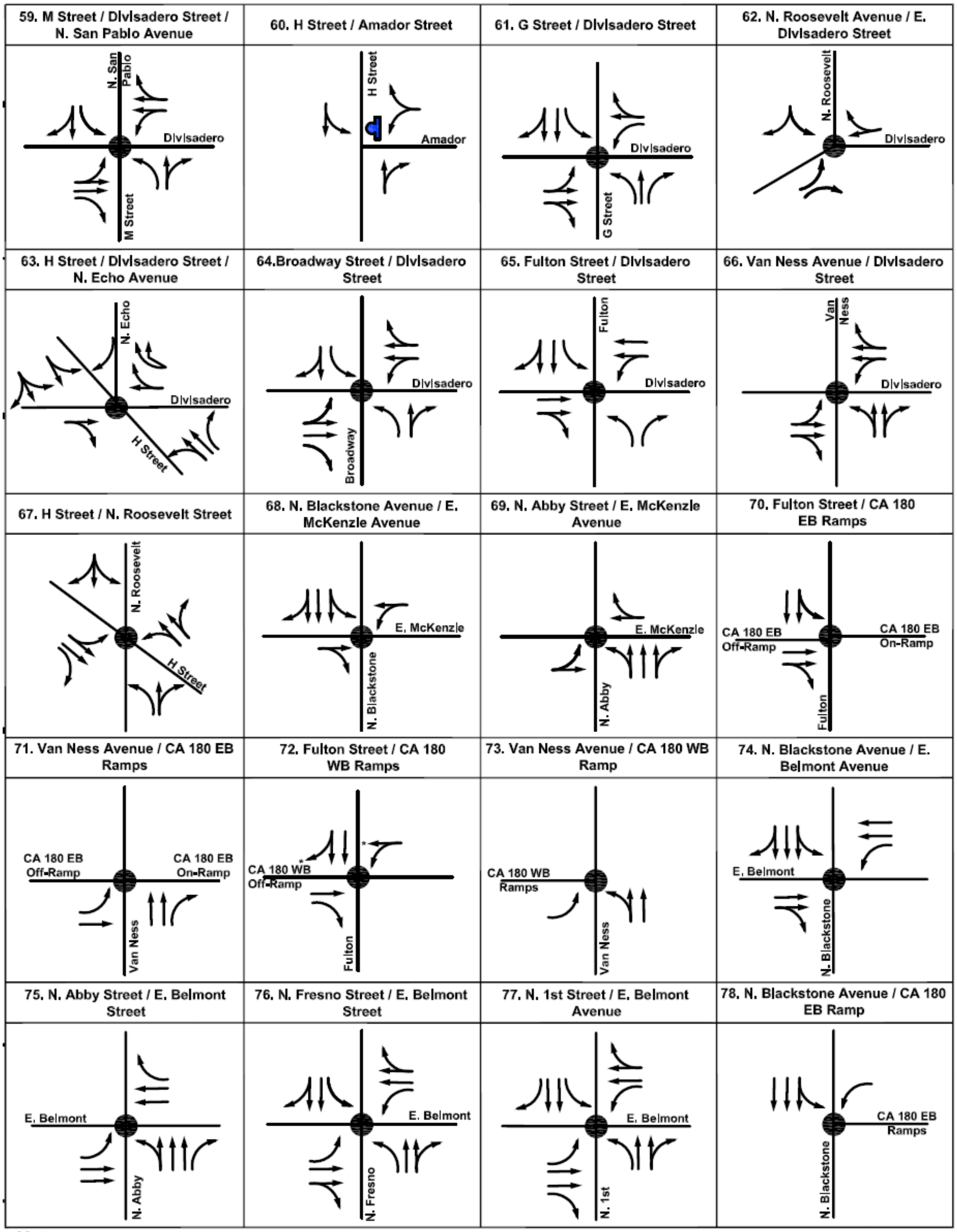
Note:
* = Going to SR 41 NB On-Ramp
= Stop Sign
= 4-way Signal

Figure 4.9-11(b)
Existing Intersection Geometry – Fresno Station



= Stop Sign
= 4-way Signal

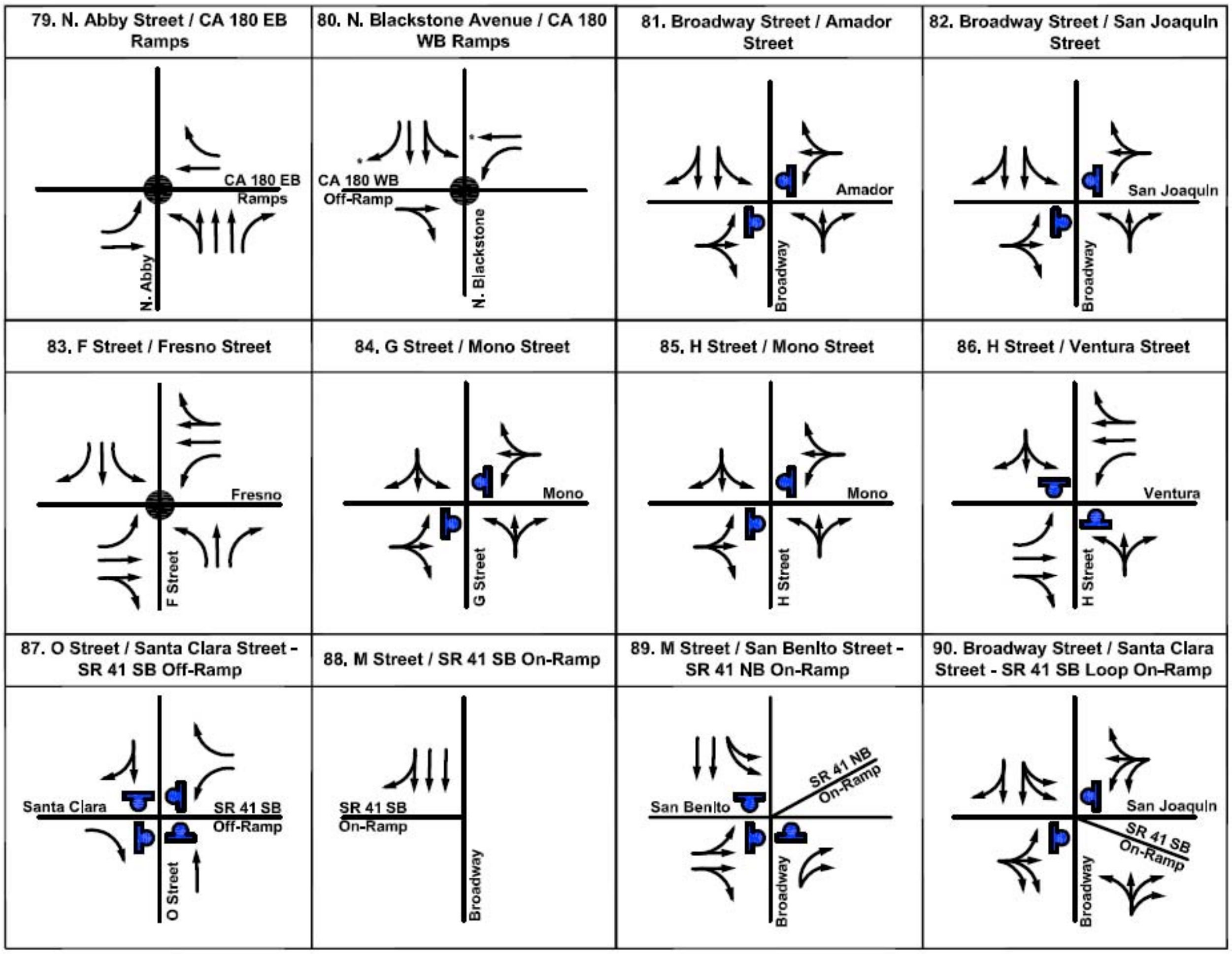
Figure 4.9-11(c)
Existing Intersection Geometry – Fresno Station



Note:
* = Going to CA 180 WB On-Ramp

= Stop Sign
= 4-way Signal

Figure 4.9-11(d)
Existing Intersection Geometry – Fresno Station



Note:
* = Going to CA 180 WB On-Ramp

= Stop Sign
= 4-way Signal

Figure 4.9-11(e)
Existing Intersection Geometry – Fresno Station

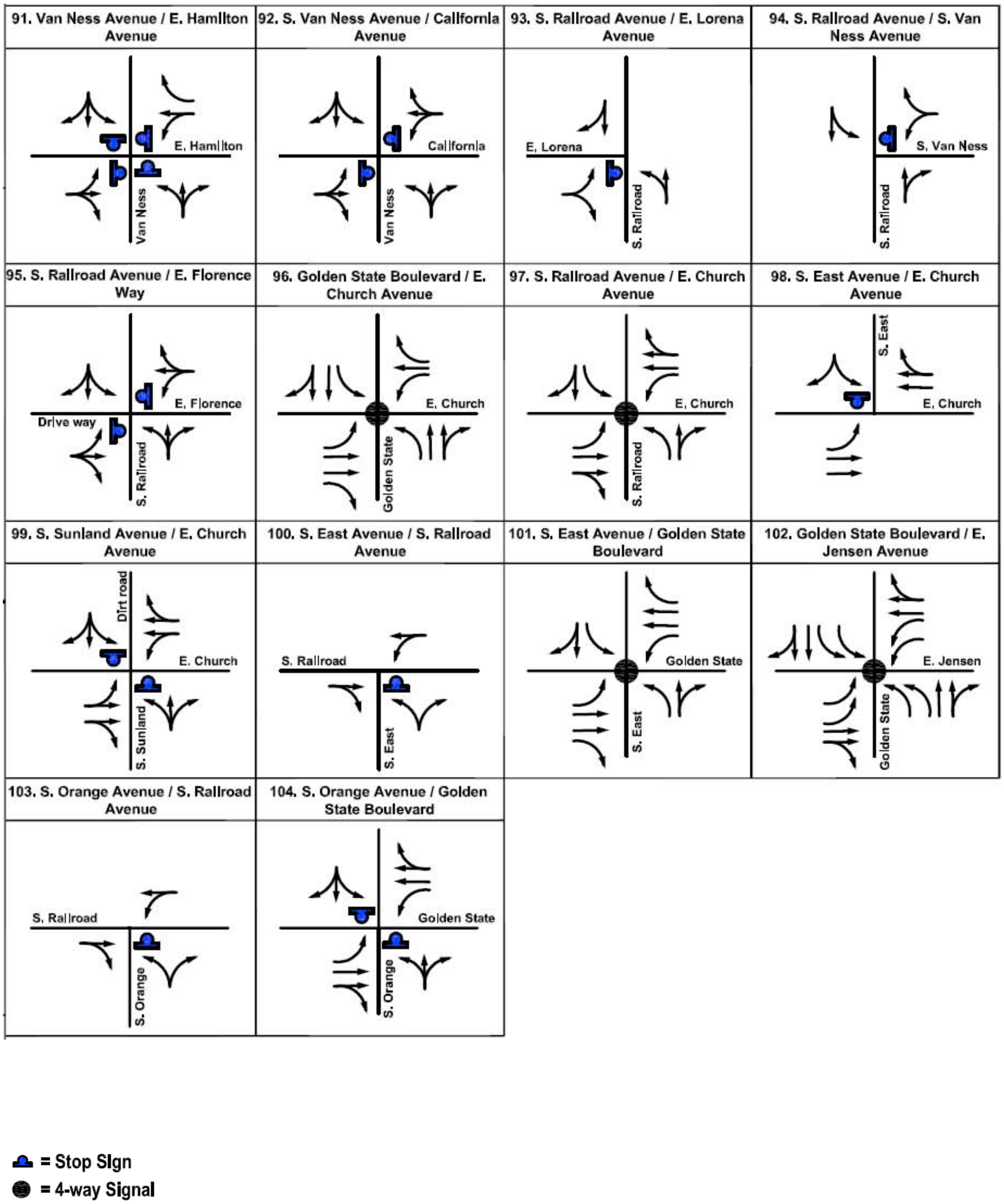
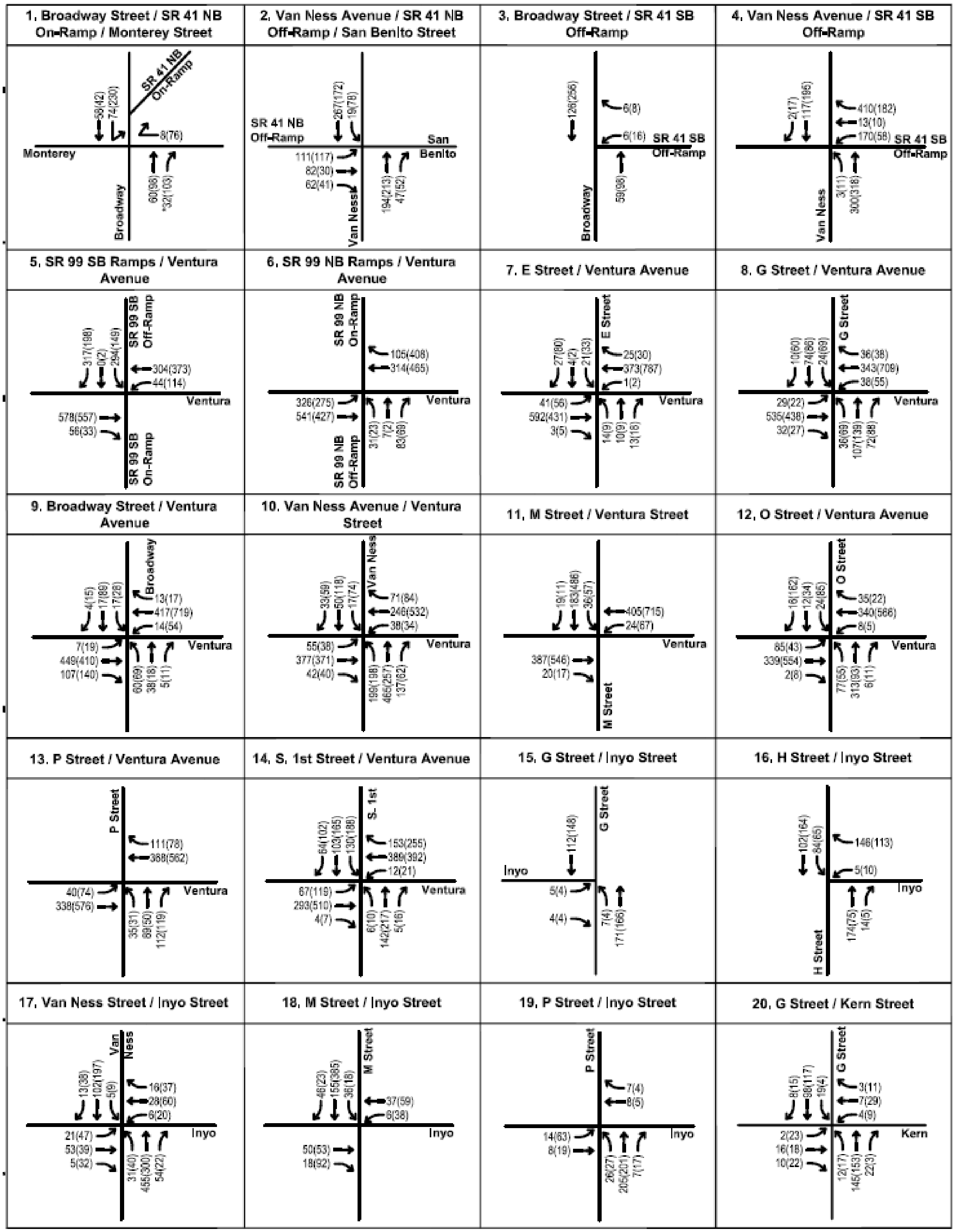
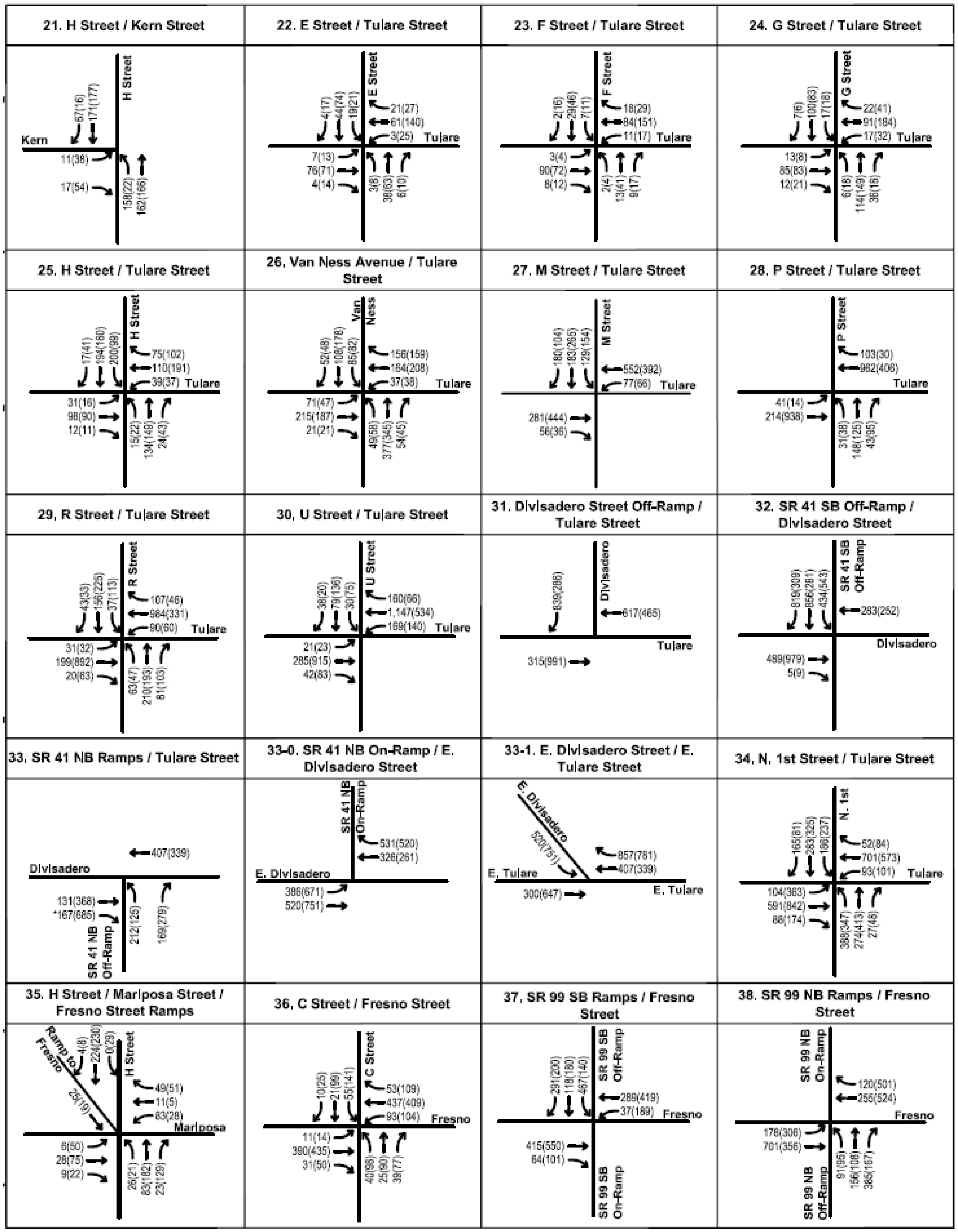


Figure 4.9-11(f)
Existing Intersection Geometry – Fresno Station



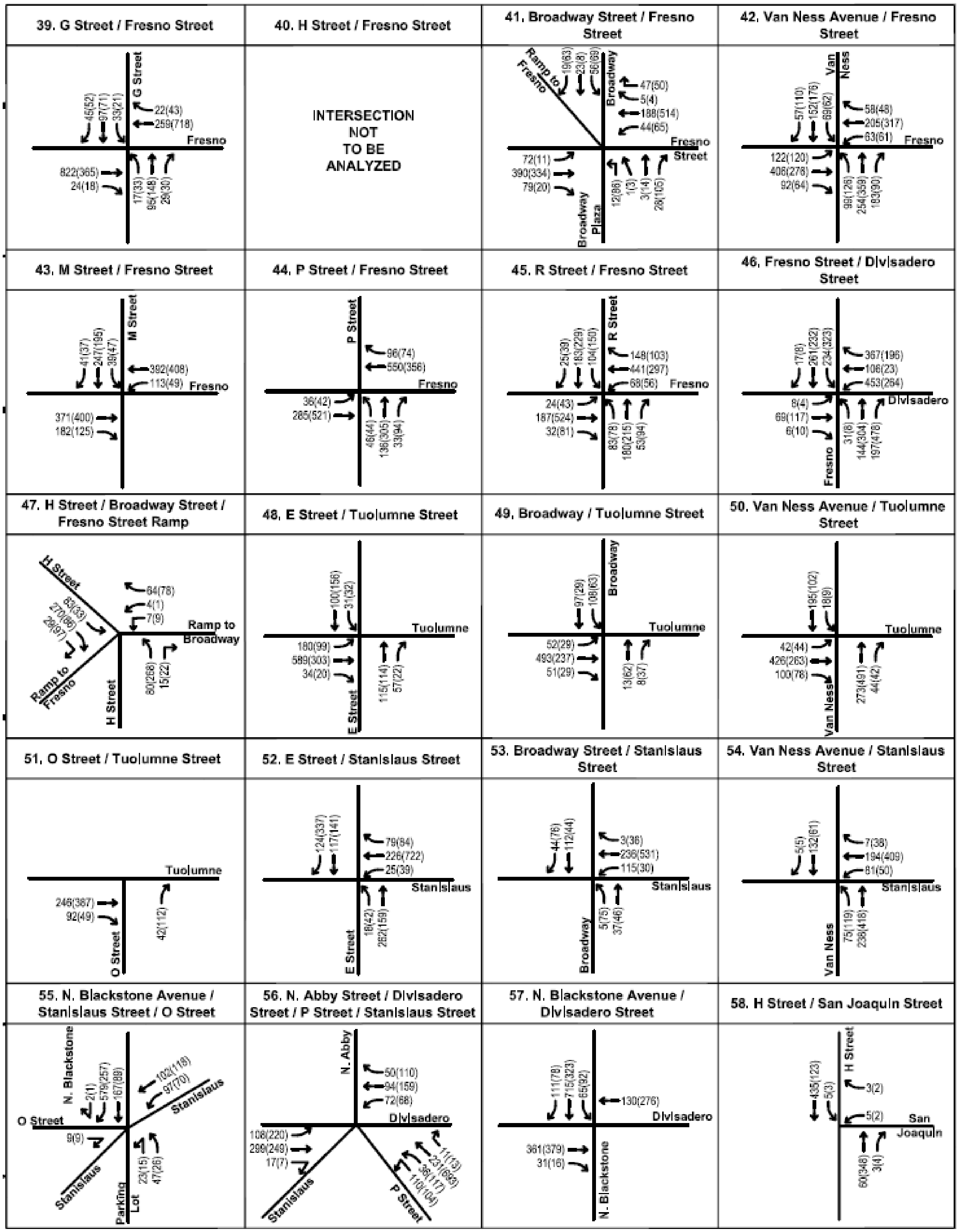
XX (XX) = AM (PM) Peak Hour

Figure 4.9-12(a)
Existing Intersection Volumes – Fresno Station



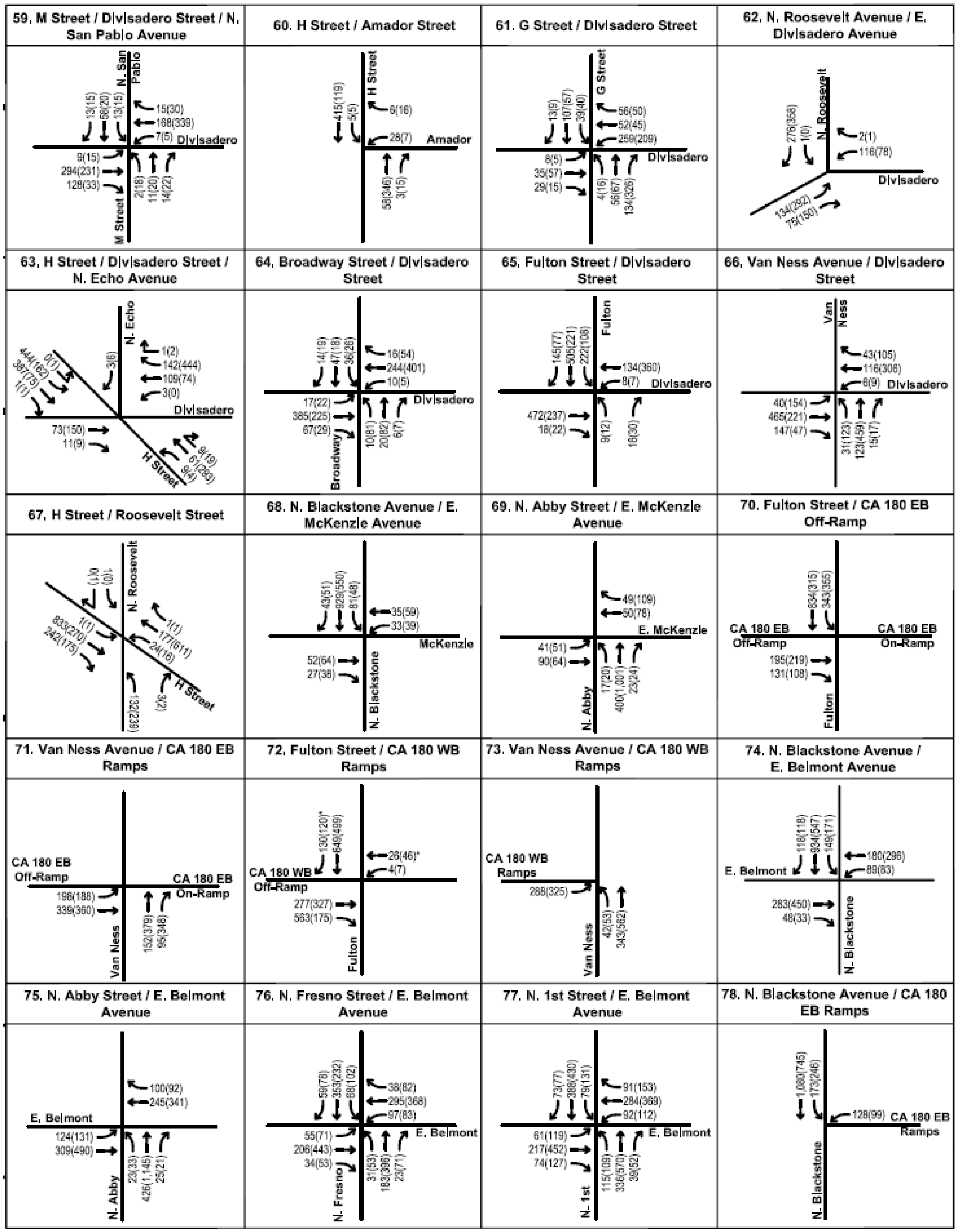
XX (XX) = AM (PM) Peak Hour

Figure 4.9-12(b)
Existing Intersection Volumes – Fresno Station



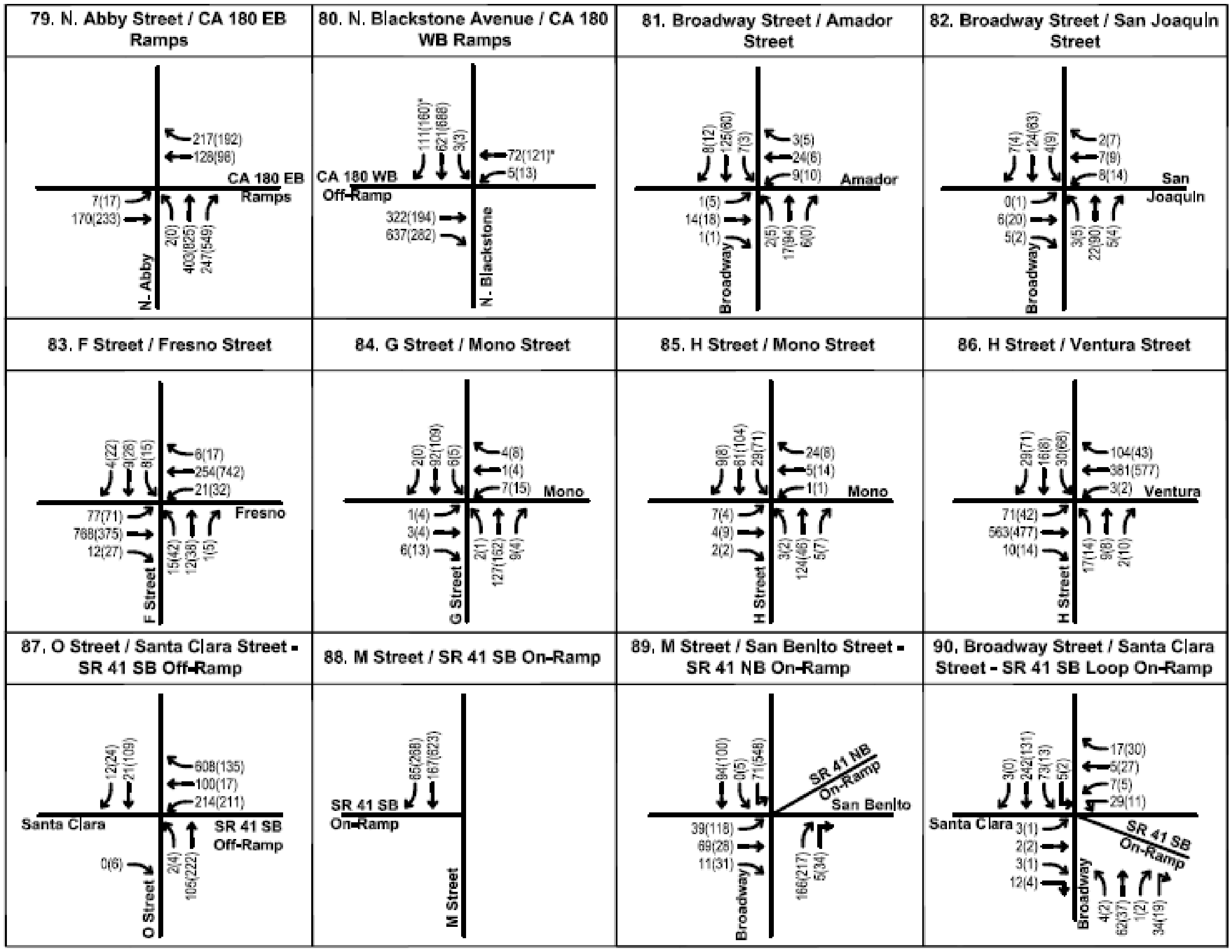
XX (XX) = AM (PM) Peak Hour

Figure 4.9-12(c)
Existing Intersection Volumes – Fresno Station



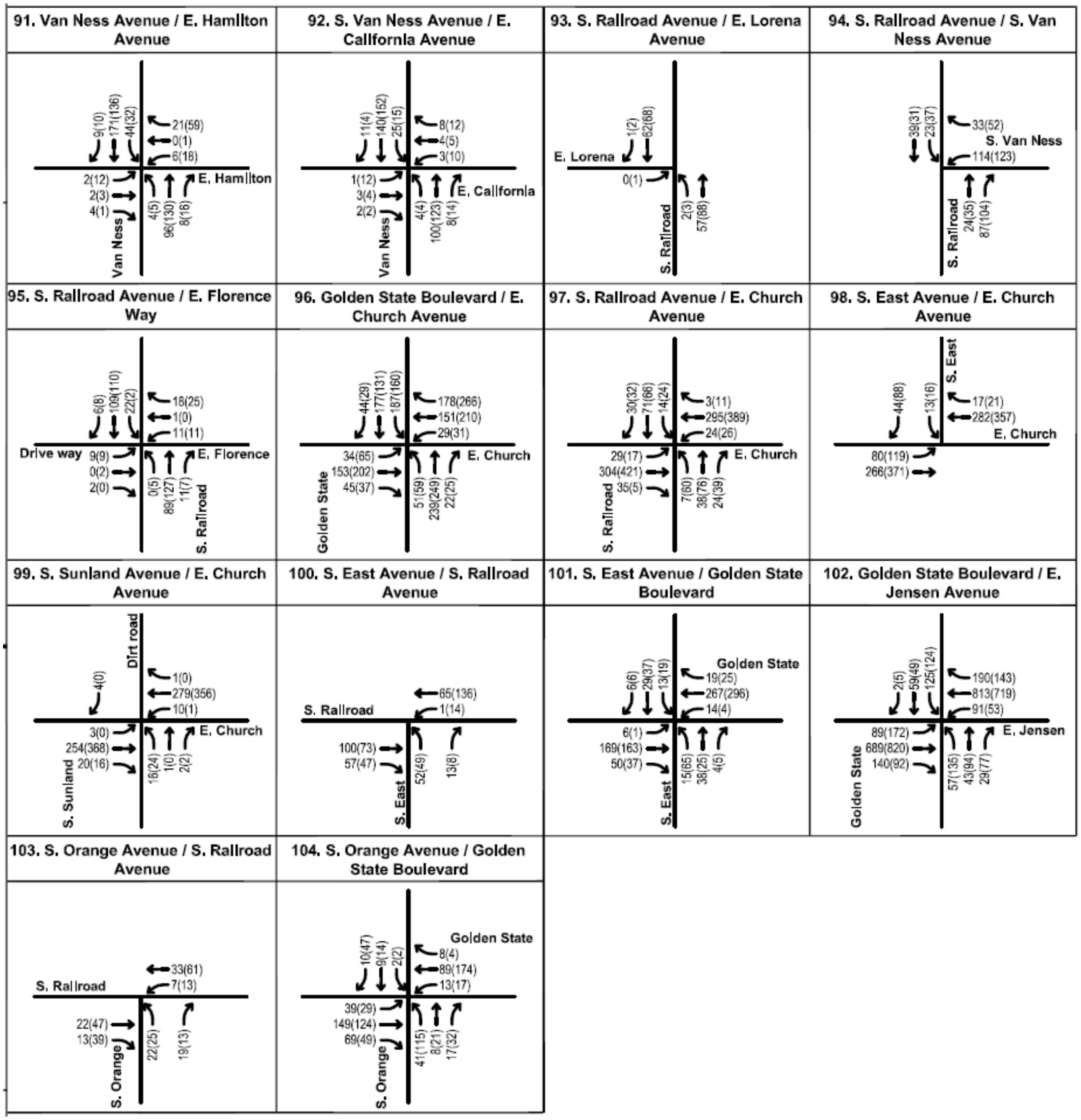
XX (XX) = AM (PM) Peak Hour

Figure 4.9-12(d)
Existing Intersection Volumes – Fresno Station



XX (XX) = AM (PM) Peak Hour

Figure 4.9-12(e)
Existing Intersection Volumes – Fresno Station



XX (XX) = AM (PM) Peak Hour

Figure 4.9-12(f)
Existing Intersection Volumes – Fresno Station

Based on the existing geometry and volumes, intersection analysis has been performed using the Synchro software package, as required by the City of Fresno. The results of the analysis are presented in Table 4.9-9.

Table 4.9-9
Existing Intersection Operating Conditions – Downtown Fresno Station

			Existing Conditions			
			AM Peak		PM Peak	
No.	Intersection	Control	LOS	Delay (sec)	LOS	Delay (sec)
1	Broadway St/SR 41 NB Ramp/Monterey St	Unsignalized	A	8.9	B	10.3
2	Van Ness Ave/SR 41 NB Ramp	Unsignalized	B	10.2	B	10.1
3	Broadway St/SR 41 SB Ramp	Unsignalized	A	9.3	B	10.8
4	Van Ness Ave/SR 41 SB Ramp	Unsignalized	C	24.5	B	13.3
5	SR 99 SB Ramps/Ventura Ave	Signalized	B	10.5	A	7.2
6	SR 99 NB Ramps/Ventura Ave	Unsignalized	F	>50	D	34.5
7	E St/Ventura Ave	Unsignalized	D	32.1	E	35.7
8	G St/Ventura Ave	Signalized	A	9.6	B	10.5
9	Broadway St/Ventura Ave	Signalized	B	14.7	C	20.7
10	Van Ness Ave/Ventura St	Signalized	B	18.6	B	16.2
11	M St/Ventura Ave	Signalized	A	9.2	B	10.4
12	O St/Ventura Ave	Signalized	C	27.3	C	21.6
13	P St/Ventura Ave	Signalized	A	6.1	A	4.9
14	N 1st St/Ventura Ave	Signalized	B	13.6	B	16.5
15	G St/Inyo St	Unsignalized	A	9.9	B	10.0
16	H St/ Inyo St	Signalized	A	9.6	A	7.8
17	Van Ness Ave/Inyo St	Signalized	A	7.1	A	8.1
18	M St/Inyo St	Signalized	A	6.5	A	8.2
19	P St/Inyo St	Unsignalized	B	10.7	B	11.1
20	G St/Kern St	Signalized	A	4.6	A	5.1
21	H St/Kern St	Unsignalized	B	13.2	B	11.6
22	E St/Tulare St	Signalized	A	7.5	A	7.7
23	F St/Tulare St	Signalized	A	5.7	A	7.5
24	G St/Tulare St	Signalized	A	7.9	B	11.4
25	H St/Tulare St	Signalized	B	11.1	B	10.5
26	Van Ness Ave/Tulare St	Signalized	C	20.4	B	18.5

No.	Intersection	Control	Existing Conditions			
			AM Peak		PM Peak	
			LOS	Delay (sec)	LOS	Delay (sec)
27	M St/Tulare St	Signalized	A	9.8	B	10.5
28	P St/Tulare St	Signalized	A	6.4	A	6.2
29	R St/Tulare St	Signalized	B	12.0	B	11.8
30	U St/Tulare St	Signalized	A	6.1	B	13.3
31	Divisadero St Off-ramp/Tulare St	Signalized	A	7.1	B	11.7
32	SR 41 SB Ramp/Divisadero St	Signalized	C	20.3	A	9.8
33	SR 41 NB Ramps/Tulare St	Signalized	B	10.0	B	12.3
33-0	Divisadero St/SR 41 NB Ramps/Tulare St	Signalized	F	>80	F	>80
34	N 1st St/Tulare St	Signalized	C	34.0	D	35.9
35	H St/Mariposa St/Fresno Ramps	Signalized	A	9.4	A	8.3
36	C St/Fresno St	Signalized	A	8.1	B	13.4
37	SR 99 SB Ramps/Fresno St	Signalized	B	18.2	C	23.7
38	SR 99 NB Ramps/Fresno St	Signalized	B	16.2	C	22.5
39	G St/Fresno St	Signalized	A	7.2	A	7.0
40	H St/Fresno St	Not Used	-	-	-	-
41	Broadway St/Fresno St	Signalized	A	5.0	A	6.9
42	Van Ness Ave/Fresno St	Signalized	C	23.6	C	25.4
43	M St/Fresno St	Signalized	A	9.6	A	9.4
44	P St/Fresno St	Signalized	A	9.6	A	9.8
45	Fresno St/R St	Signalized	B	11.1	B	11.8
46	Fresno St/Divisadero St	Signalized	C	22.7	C	23.1
47	H St/Broadway St	Signalized	A	6.7	A	8.9
48	E St/Tuolumne St	Signalized	A	8.9	B	10.2
49	Broadway St/Tuolumne St	Signalized	B	10.1	B	11.0
50	Van Ness Ave/Tuolumne St	Signalized	B	11.2	B	12.7
51	O St/Tuolumne St	Signalized	A	4.1	A	4.3
52	E St/Stanislaus St	Signalized	A	6.2	A	8.5
53	Broadway St/Stanislaus St	Signalized	A	9.3	A	8.6
54	Van Ness Ave/Stanislaus St	Signalized	B	10.5	B	11.9
55	N Blackstone Ave/Stanislaus St	Signalized	B	19.9	B	15.3

No.	Intersection	Control	Existing Conditions			
			AM Peak		PM Peak	
			LOS	Delay (sec)	LOS	Delay (sec)
56	N Abby St/E Divisadero St	Signalized	B	10.9	B	13.5
57	N Blackstone Ave/Divisadero St	Signalized	B	13.8	B	10.5
58	H St/San Joaquin St	Unsignalized	B	12.8	B	12.4
59	M St/Divisadero St	Signalized	A	7.6	A	6.4
60	H St/Amador St	Unsignalized	B	14.6	B	12.3
61	G St/Divisadero St	Signalized	A	8.1	A	8.7
62	N Roosevelt Ave/E Divisadero Ave	Unsignalized	B	13.8	C	16.5
63	H St/Divisadero St	Signalized	E	74.7	C	33.7
64	Broadway St/Divisadero St	Signalized	A	5.7	A	7.7
65	Fulton St/Divisadero St	Signalized	B	11.9	B	10.6
66	Van Ness Ave/Divisadero St	Signalized	A	8.7	B	13.2
67	H St/Roosevelt St	Signalized	B	13.9	B	13.5
68	N Blackstone Ave/E Mckenzie Ave	Signalized	A	5.7	A	6.8
69	N Abby St/E Mckenzie Ave	Signalized	A	6.8	A	7.5
70	Fulton St/SR 180 EB Ramps	Signalized	B	11.3	A	8.7
71	Van Ness Ave/SR 180 EB Ramps	Signalized	A	7.4	B	10.8
72	Fulton St/SR 180 WB Ramps	Signalized	B	18.0	A	9.8
73	Van Ness Ave/SR 180 WB Ramps	Signalized	A	8.7	B	10.6
74	N Blackstone Ave/E Belmont Ave	Signalized	B	17.5	B	15.0
75	N Abby St/E Belmont St	Signalized	B	13.5	B	16.4
76	Fresno St/E Belmont St	Signalized	C	23.9	C	29.9
77	N 1st St/E Belmont St	Signalized	C	22.0	C	27.1
78	N Blackstone Ave/SR 180 EB Ramps	Signalized	A	8.5	A	5.9
79	N Abby St/SR 180 EB Ramps	Signalized	A	9.0	B	11.0
80	N Blackstone Ave/SR 180 WB Ramps	Signalized	F	>80.0	B	17.4
81	Broadway St/Amador St	Unsignalized	B	10.2	B	10.9
82	Broadway St/San Joaquin St	Unsignalized	A	9.8	B	11.0
83	F St/Fresno St	Signalized	A	4.8	A	5.2
84	G St/Mono St	Unsignalized	B	10.2	B	11.0
85	H St/Mono St	Unsignalized	B	11.0	B	11.9

No.	Intersection	Control	Existing Conditions			
			AM Peak		PM Peak	
			LOS	Delay (sec)	LOS	Delay (sec)
86	H St/Ventura St	Unsignalized	D	34.7	D	28.6
87	O St/Santa Clara St - SR 41 SB Off-ramp	Unsignalized	B	11.5	B	11.1
88	M St/SR 41 SB On-ramp	Not Used	-	-	-	-
89	M St/San Benito - SR 41 NB On-ramp	Unsignalized	B	11.3	F	>50
90	Broadway St/Santa Clara St	Unsignalized	B	12.5	B	10.0
91	Van Ness Ave/E Hamilton Ave	Unsignalized	A	9.0	A	8.7
92	S Van Ness Ave/E California Ave	Unsignalized	B	10.8	B	11.6
93	S Railroad Ave/E Lorena Ave	Unsignalized	A	0.3	A	9.6
94	S Van Ness Ave/S Railroad Ave	Unsignalized	B	10.7	B	11.0
95	S Railroad Ave/E Florence Ave	Unsignalized	B	11.0	B	11.5
96	Golden State Blvd/E Church Ave	Signalized	B	14.1	B	13.3
97	S Railroad Ave/E Church Ave	Signalized	A	5.4	A	5.8
98	S East Ave/E Church Ave	Unsignalized	B	11.4	B	12.8
99	S Sunland Ave/E Church Ave	Unsignalized	B	14.4	C	16.3
100	S East Ave/S Railroad Ave	Unsignalized	B	10.7	B	11.1
101	S East Ave/Golden State Blvd	Signalized	B	17.2	C	24.9
102	Golden State Blvd/E Jensen Ave	Signalized	B	14.9	B	14.8
103	S Railroad Ave/S Orange Ave	Unsignalized	A	9.1	A	7.3
104	S Golden State Blvd/S Orange Ave	Unsignalized	B	11.7	B	13.8

Notes: Delay represented is average delay at signalized intersections and average delay on controlled approaches at un-signalized intersections.
Delay is in seconds per vehicle.

Acronyms and Abbreviations:

AM	morning
CA	California
E	east
LOS	level of service
N	north
PM	afternoon
SR	State Route

As noted from Table 4.9-9, all intersections operate at LOS D or better except Intersections 6, Ventura Avenue/SR 99 Northbound Ramps; 7, E Street/Ventura Avenue; 33-0, Divisadero Street/SR 41 NB Ramps/Tulare Street; 63, H Street/Divisadero Street, 80, N Blackstone Avenue/SR 180 Westbound Ramps; and 89, M Street/San Benito-SR 41 Northbound On-ramp, which operate at LOS E or F during the AM and/or PM peak hour(s).

4.9.14 Existing Pedestrian Facilities

Sidewalks are present on most of the streets in the vicinity of the station alternatives.

4.9.15 Existing Bike Facilities

The City of Fresno produced the *Draft Bicycle, Pedestrian, and Trails Master Plan* (Bicycle Transportation Plan) in spring 2010. The objective of the Bicycle Transportation Plan is to establish and maintain a continuous, safe, and easily accessible bikeway system throughout the metropolitan area that would facilitate bicycling as a viable transportation alternative and a recreational activity that would reduce vehicle use, improve air quality, improve the quality of life, and provide public health benefits (City of Fresno 2010a). There are currently two existing bikeways within a 1-mile radius of the proposed Fresno HST station, as shown on Figure 4.9-13, along Huntington Boulevard and B Street.

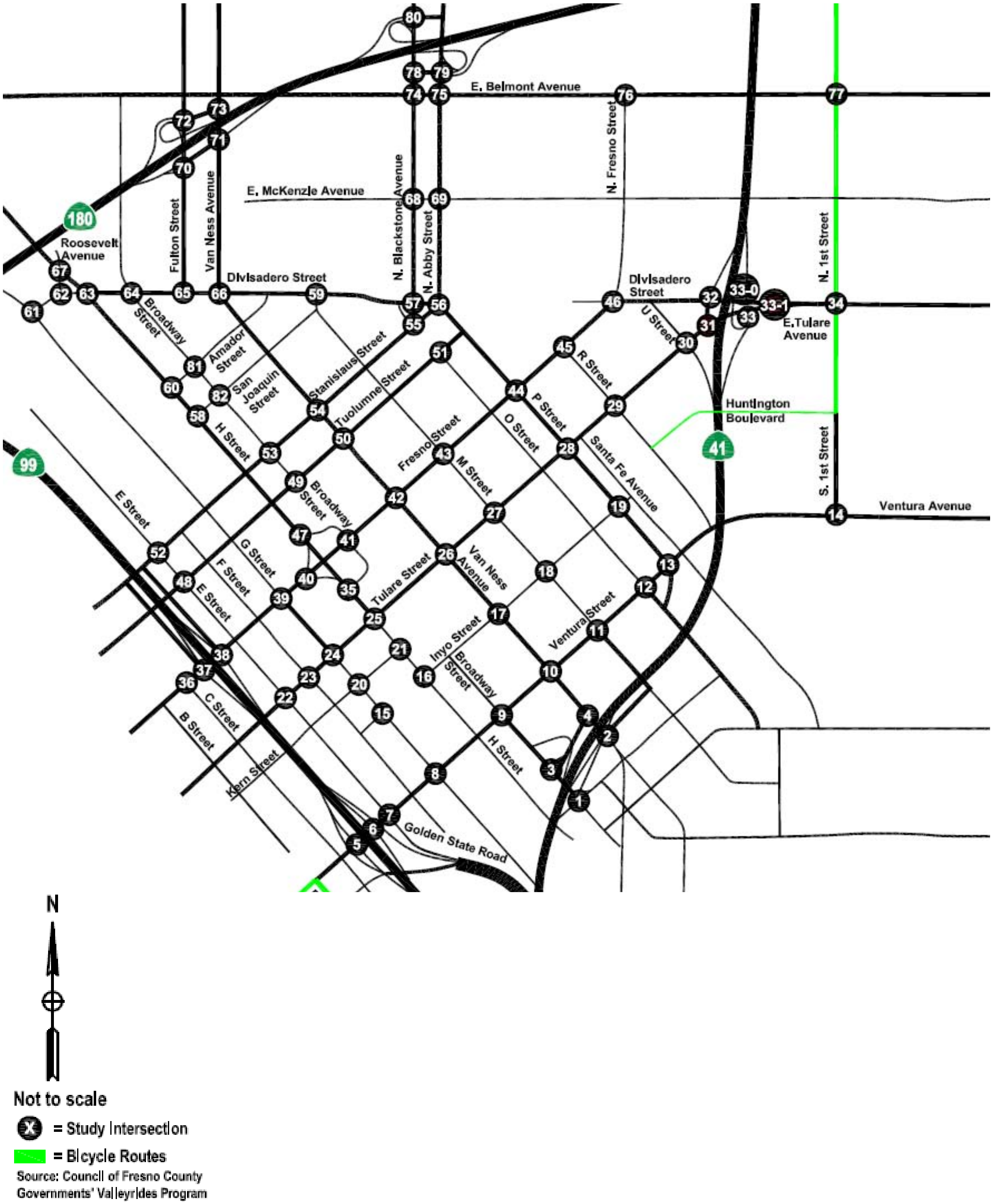


Figure 4.9-13
Existing Bicycle Facilities – Fresno Station

4.9.16 Existing Parking Facilities

The City owns and operates 10 parking lots and garages that provide event, monthly, and/or daily parking in Downtown Fresno (City of Fresno 2009). The combined parking lots and garages provide approximately 4,700 parking stalls, not including the underground parking garage near Tulare Avenue and Van Ness Avenue that runs several city blocks. Figure 4.9-14 illustrates the existing City-owned parking garages and lots. The following garages and parking lots are in Downtown Fresno:

- Garage 4 Tulare Avenue and Fulton Mall – Parking Garage 4 is located at 1919 Tulare Street, at the corner of Tulare and Fulton Mall. This is a 3-story garage with a total of 313 parking stalls, including 7 spaces drivers with disabilities.
- Garage 7 Van Ness and Inyo Avenue – Parking Garage 7 is also known as the Spiral Garage, and is located at 801 Van Ness Avenue at the corner of Van Ness and Inyo Avenues. This garage features 4 levels and has 587 stalls, with 15 spaces for drivers with disabilities.
- Garage 8 Tulare Avenue and Van Ness Avenues – Parking Garage 8 is located at 1077 Van Ness Avenue and is an underground garage that runs along several City blocks.
- Garage 9 Van Ness Avenue and Merced Street – Garage 9 is located at 2020 Merced Street; this garage has capacity for 213 vehicles.
- Convention Center Garage Inyo and O Streets – The New Convention Center Parking Structure features 5 levels and 1,565 parking spaces, including 8 motorcycle spaces and 26 spaces for drivers with disabilities.
- Lot 2 Broadway and H Streets – This public parking lot has approximately 210 parking stalls, including 10 spaces for disabled drivers and 1 motorcycle-dedicated stall.
- Promenade Lot Tulare Avenue and R Street – This public parking lot is located at 2710 Tulare Street and has 750 parking stalls; 14 spaces are reserved for drivers with disabilities.
- Stadium Lot H and Kern Streets – Stadium Lot is on H Street between Kern Street and Inyo Street. The lot has 525 parking stalls, including 1 motorcycle stall and 12 parking spaces for drivers with disabilities.
- Boxcar Lot H and Tuolumne Streets – This lot is on the western section of Downtown Fresno and has 525 parking stalls, 11 for drivers with disabilities. This location is a pick-up and drop-off point for the downtown trolley.
- Lot 3 Fulton and Mariposa Malls – Lot 3 is a small lot between Fulton Mall and Mariposa Mall, consisting of 22 parking stalls. Parking in this lot is limited to monthly permit holders only.

4.9.17 Freight and Goods Movement

Freight and goods movement is accomplished in the area through truck cartage and rail freight services. The following paragraphs describe both services and their use.

4.9.17.1 Truck Routes

Multiple truck routes pass near the proposed Fresno station. The designated truck routes are listed below (City of Fresno 2010b).

- N Blackstone Avenue between Belmont Avenue and Divisadero Street
- N Abby Street between Belmont Avenue and Divisadero Street
- Divisadero Street between G Street and P Street

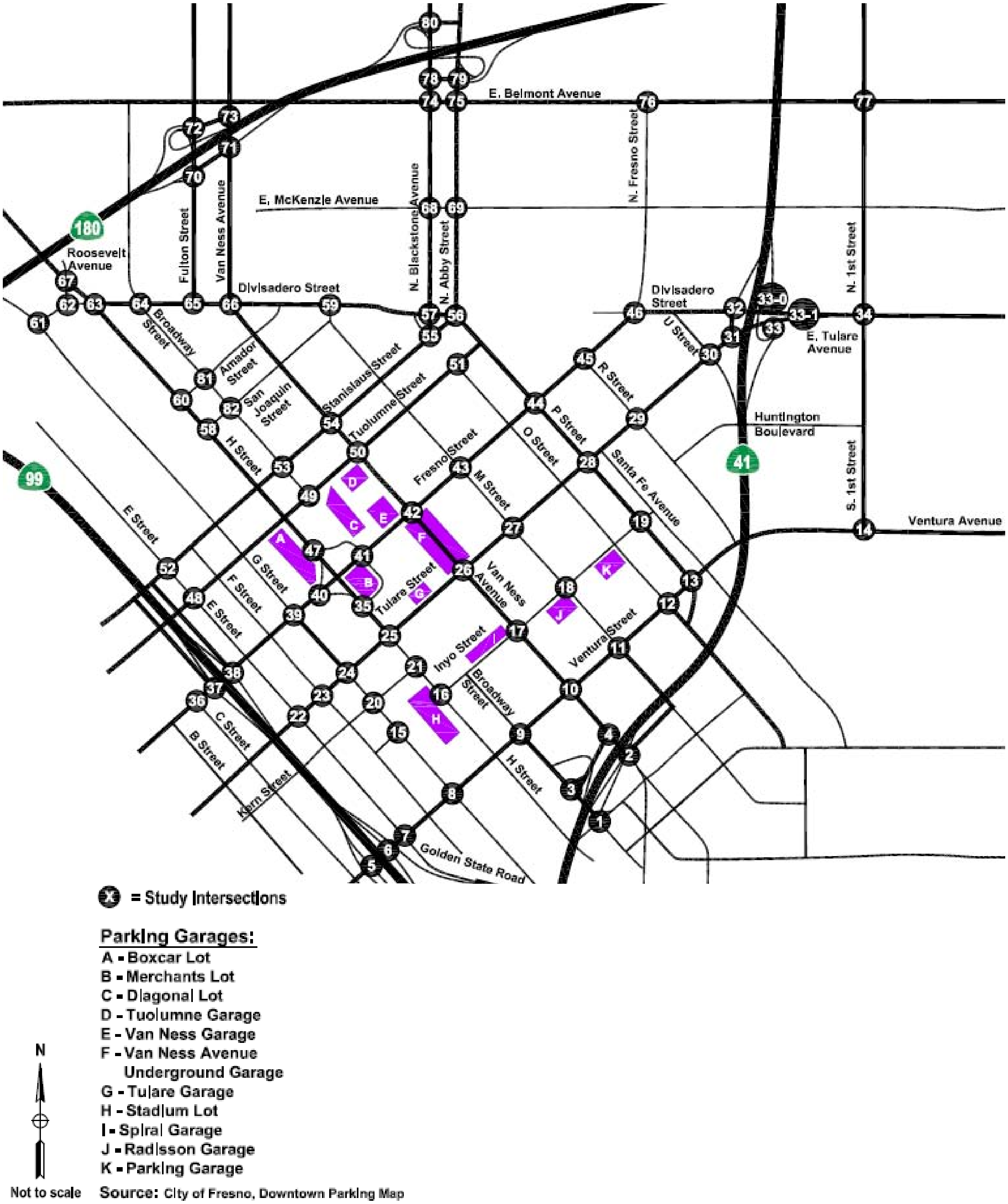


Figure 4.9-14
Existing Parking Facilities – Fresno Station

- Stanislaus Street between B Street and P Street
- Tuolumne Street between A Street and P Street
- P Street between Stanislaus Street and Ventura Street
- M Street between Stanislaus Street and Ventura Street
- Ventura Street between B Street and R Street

4.9.17.2 Freight Rail and Train Movements

The UPRR and BNSF railroads provide freight service within the City of Fresno.

4.10 Existing Conditions around Proposed Heavy Maintenance Facility Sites

4.10.1 Castle Commerce Center HMF

4.10.1.1 Site Description

The Castle Commerce Center HMF site is located approximately 6 miles northwest of Merced, at the former Castle Air Force Base in northern unincorporated Merced County. The proposed site is adjacent to and on the east side of the BNSF mainline, 1.75 miles south of the UPRR mainline. The site is bounded by Santa Fe Drive to the south and west, Shuttle Road and Castle railroad spur to the north, and Merced Irrigation District Facility (MID) Canal Creek to the east. The site can be accessed from SR 99 via the ramps on Buhach Road and from SR 59 via Santa Fe Drive. Another potential access to SR 99 would be via the proposed Atwater-Merced Expressway (AME). Intersections along the future AME in the vicinity of the HMF are analyzed under future conditions.

4.10.1.2 Study Area

The tracks leading to the HMF begin at the north end of the proposed Merced station. To assess the impacts of the facility, intersections in Downtown Merced that could potentially be affected by the at-grade track alignment in this area were also analyzed.

A total of 72 intersections were identified for analysis in the vicinity of the proposed Castle Commerce Center HMF site location and the proposed track alignment beginning north of Merced station. These intersections are listed below and shown in Figures 4.10-1(a) and 4.10-1(b). Intersections 1 through 25 are in the vicinity of the HMF and Intersections 26 through 72 are located in Downtown Merced, which are the same as those identified for Merced station analysis.

1) Winton Way / Bellevue Road
2) Atwater Boulevard / Applegate Road
3) Sycamore Avenue / SR 99 Northbound Ramps
4) Sycamore Avenue / Applegate Road
5) Bell Lane / Mall Access / SR 99 Southbound Ramps
6) Bell Drive / Bell Lane
7) Bell Drive / Commerce Avenue / Applegate Road
8) Mall Access / Applegate Road
9) Santa Fe Drive / Buhach Road / Airdrome Entry
10) Buhach Road / Bellevue Road
11) Ashby Road / Buhach Road
12) Ashby Road / N 193
13) Ashby Road / SR 99 Southbound Ramps
14) Santa Fe Drive / Bellevue Road
15) Santa Fe Drive / F Street
16) Santa Fe Drive / W Avenue 2
17) Santa Fe Drive / N Franklin Road
18) Ashby Road / Franklin Road
19) Santa Fe Drive / Belcher Avenue
20) Olive Avenue - Santa Fe Drive / SR 59
21) Santa Fe Drive/ AM Express Westbound Ramps

22) Santa Fe Drive/ AM Express Eastbound Ramps
23) SR 99 Northbound Ramps/AM Express
24) SR 99 Southbound Ramps/AM Express
25) 16th Street / SR 59
26) 13th Street - SR 99 Southbound Off-ramp / V Street
27) 14th Street - SR 99 Northbound Onramp / V Street
28) 15th Street / V Street
29) 16th Street / V Street
30) 13th Street / R Street
31) SR 99 Northbound Off-ramp - 14th Street / R Street
32) 15th Street / R Street
33) 16th Street / R Street
34) Olive Avenue / R Street
35) 15th Street / O Street
36) 16th Street / O Street
37) 15th Street / M Street
38) 16th Street / M Street
39) Olive Avenue / M Street
40) 2nd Street / Grogan Avenue / Northwest Avenue
41) Childs Avenue / Martin Luther King Jr. Way
42) 13th Street / Martin Luther King Jr. Way
43) SR 99 Southbound Ramps / Martin Luther King Jr. Way
44) SR 99 Northbound Ramps / Martin Luther King Jr. Way
45) 14th Street / Martin Luther King Jr. Way
46) 15th Street / Martin Luther King Jr. Way
47) 16th Street / Martin Luther King Jr. Way
48) 13th Street / G Street
49) SR 99 - 14th Street / G Street
50) 16th Street / G Street
51) Olive Avenue / G Street
52) SR 99 Southbound On-ramp / Yosemite Parkway (SR 140)
53) SR 99 Southbound Off-ramp / Yosemite Parkway (SR 140)
54) SR 99 Northbound Off-ramp / Yosemite Parkway (SR 140)
55) Motel Drive / Glen Avenue / Yosemite Parkway (SR 140)
56) 14th Street / O Street
57) 13th Street / M Street
58) 14th Street / M Street
59) Main Street / M Street
60) 18th Street / M Street
61) 15th Street / Canal Street
62) 16th Street / Canal Street
63) 11th Street / Martin Luther King Jr. Way
64) Main Street / Martin Luther King Jr. Way
65) 18th Street / Martin Luther King Jr. Way
66) 16th Street / H Street
67) Main Street / H Street
68) 15th Street / G Street
69) Main Street / G Street
70) 18th Street / G Street
71) 15th Street / D Street
72) 16th Street / D Street

4.10.1.3 Intersection Operating Conditions

Intersection turning movement volumes were collected at the study intersections around the proposed HMF site location in May 2010 and March 2011. These locations are presented in Figure 4.10-1. Intersection analysis was performed for the AM and PM peak hours.

Figure 4.10-2 presents existing geometry at the study intersections and Figure 4.10-3 presents the intersection volumes for the AM and PM peak hours. Based on the geometry and volumes presented in the figures, intersection analysis was performed using the Traffix software package. The results of the analysis are presented in Table 4.10-1. Intersection turning movement counts are presented in Appendix B and LOS calculation sheets are presented in Appendix C.

Figure 4.10-1(a)
Study Intersections – Castle Commerce Center HMF

Figure 4.10-1(b)
Study Intersections – Castle Commerce Center HMF

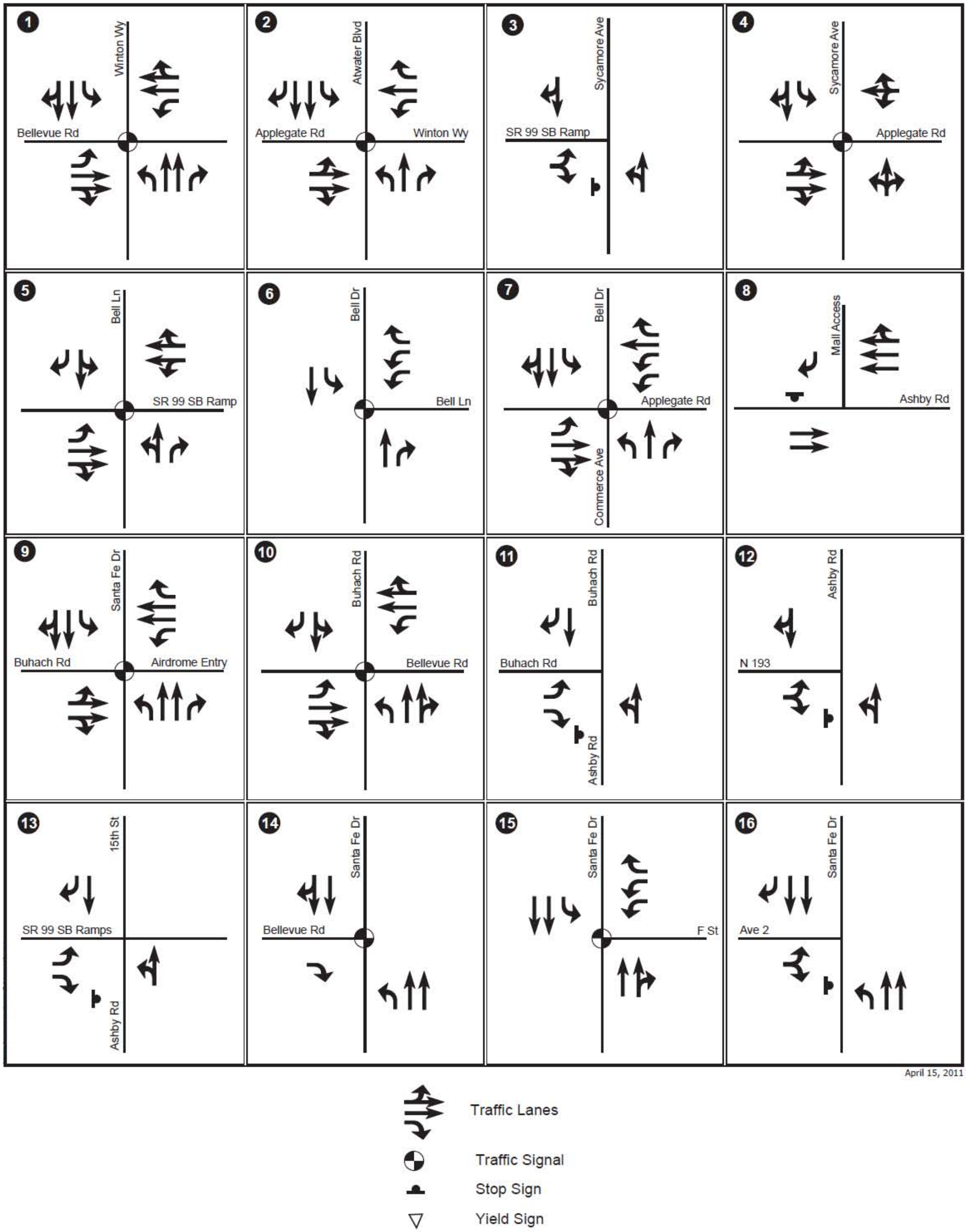
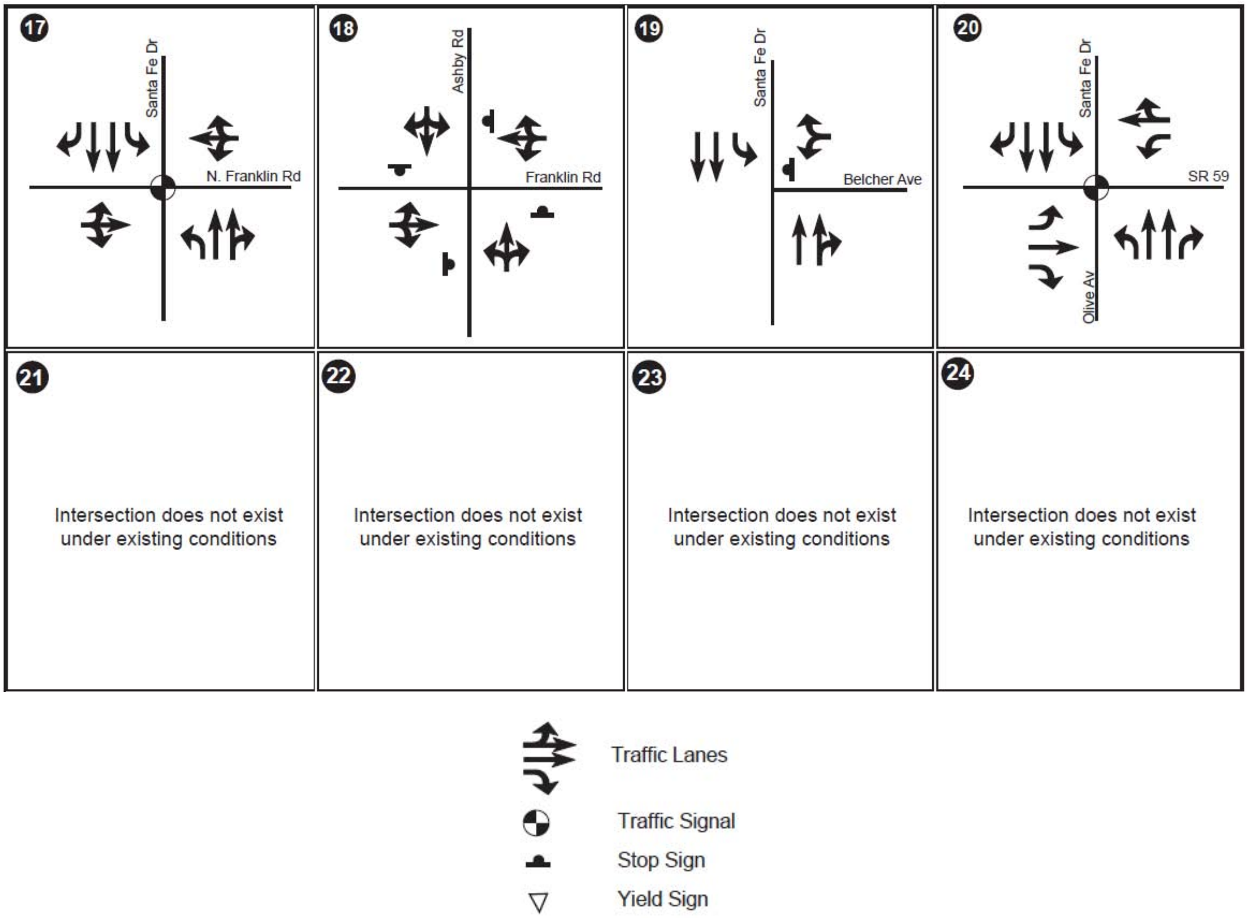
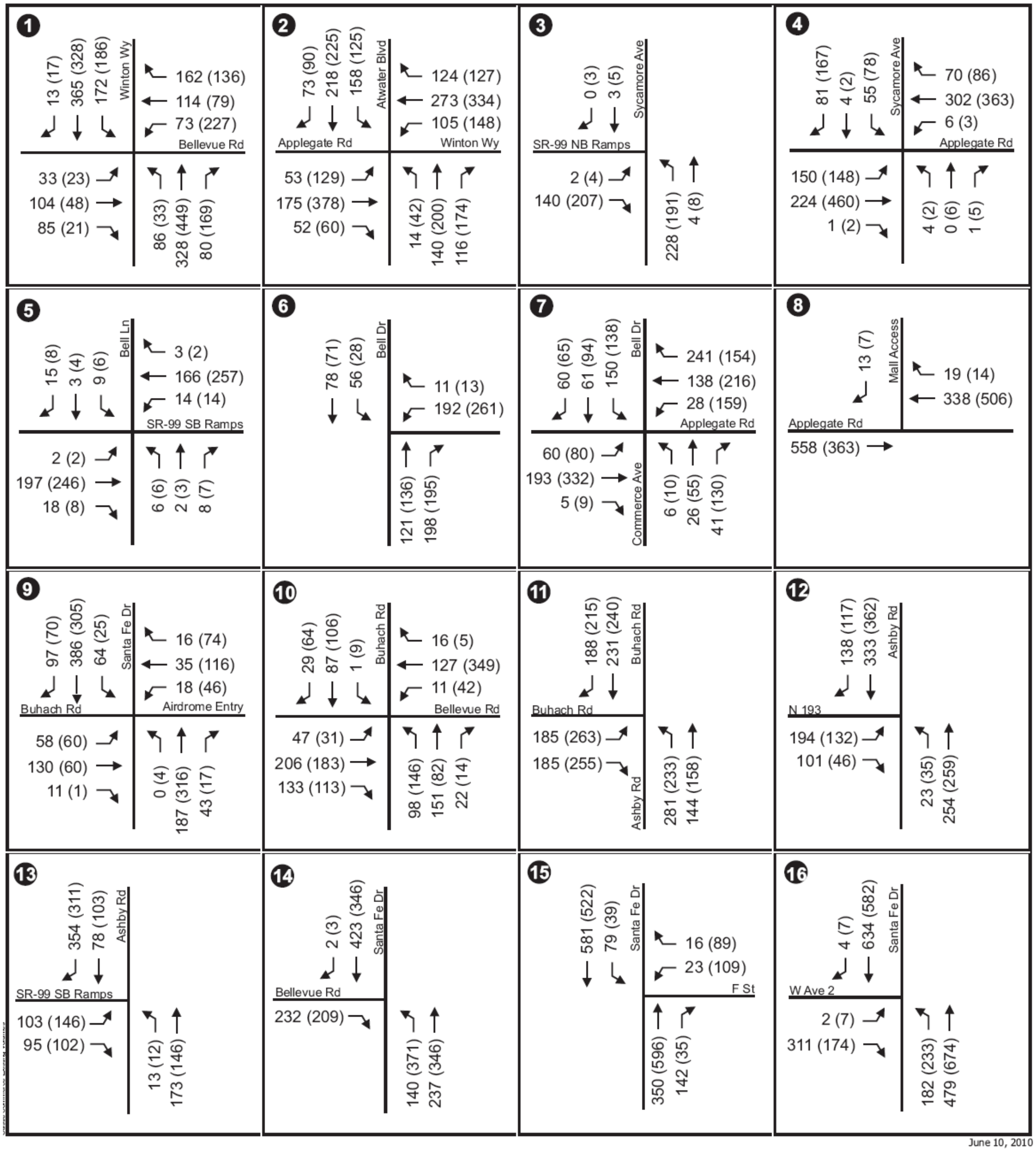


Figure 4.10-2(a)
Existing Intersection Geometry – Castle Commerce Center HMF



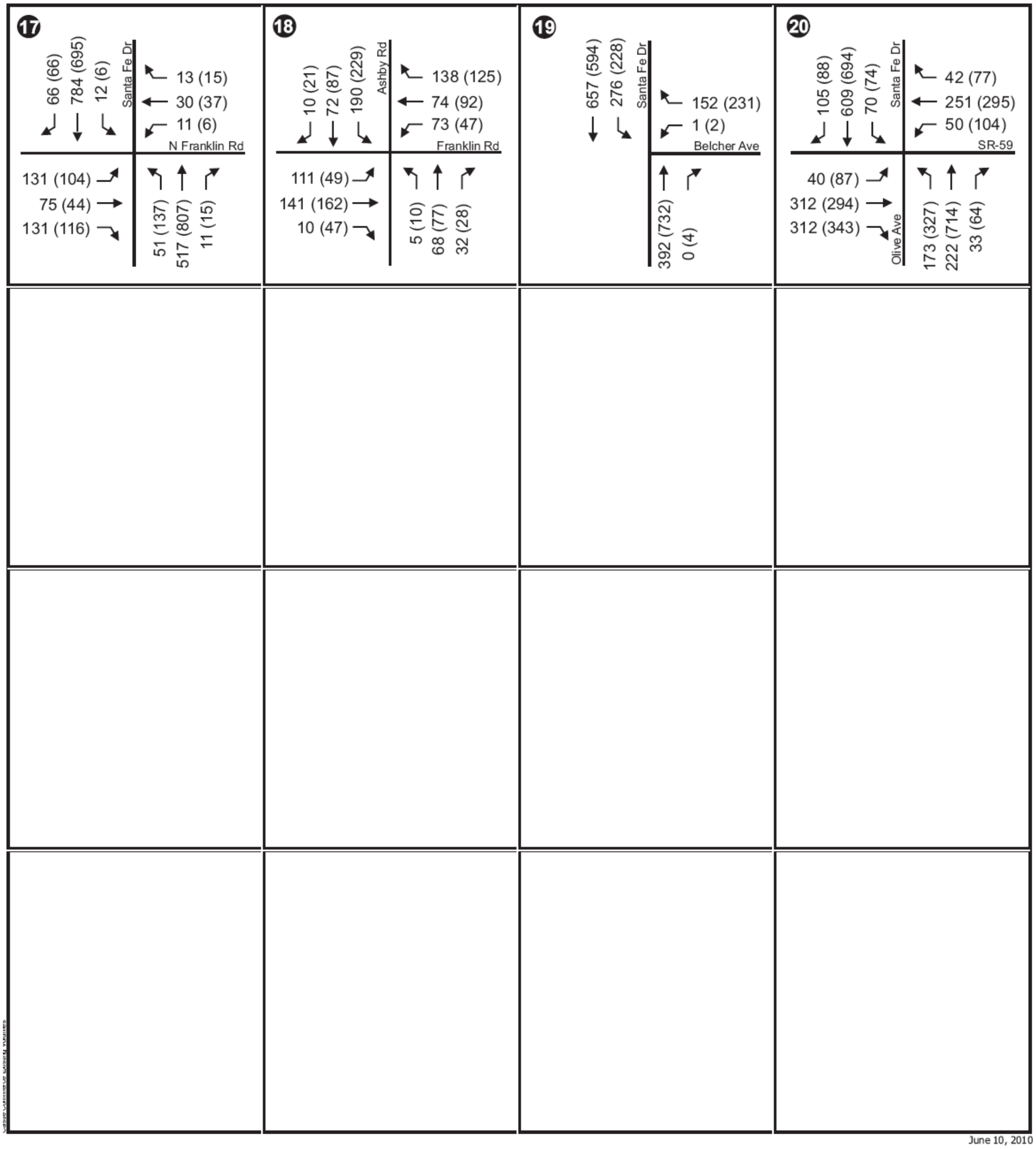
Note: Intersection 26 is the same as Intersection 1 on Figure 4.9-4 (Existing Intersection Geometry – Merced Station) and Intersections 27 through 72 are the same as Intersections 3 through 49 on Figure 4.9-4.

Figure 4.10-2(b)
Existing Intersection Geometry – Castle Commerce Center HMF



xx (xx) AM (PM) Peak Hour Volumes

Figure 4.10-3(a)
Existing Intersection Volumes – Castle Commerce Center HMF



xx (xx) AM (PM) Peak Hour Volumes

Note: Intersection 26 is the same as Intersection 1 on Figure 4.9-5 (Existing Intersection Volumes – Merced Station) and Intersections 27 through 72 are the same as Intersections 3 through 49 on Figure 4.9-5.

Figure 4.10-3(b)
Existing Intersection Volumes – Castle Commerce Center HMF

Table 4.10-1
Existing Intersection Operating Conditions – Castle Commerce Center HMF

Intersection		Intersection Control	AM Peak Hour		PM Peak Hour	
			LOS	Delay (sec)	LOS	Delay (sec)
1	N Winton Wy/Bellevue Rd	Signalized	C	27.7	C	28.5
2	Atwater Blvd/Winton Wy	Signalized	C	29.6	C	31.5
3	Sycamore Ave/SR 99 NB Ramps	Unsignalized[a]	A	8.9	A	9.2
4	Sycamore Ave/Applegate Rd	Signalized	C	20.0	C	23.1
5	Bell Ln/Bell Dr/SR 99 SB Ramps	Signalized	C	24.4	C	24.4
6	Bell Dr/Bell Ln	Signalized	C	20.0	B	19.4
7	Bell Ln – Commerce Ave/Applegate Rd	Signalized	C	26.8	C	31.0
8	Mall Access/Applegate Rd	Unsignalized[a]	A	9.0	A	9.3
9	N Buhach Rd/Santa Fe Dr/Airdome Entry	Signalized	C	21.4	C	23.5
10	N Buhach Rd/E Bellevue Rd	Signalized	C	25.2	C	27.2
11	Ashby Rd/Buhach Rd	Unsignalized[a]	F	>50	F	>50
12	Ashby Rd/N 193	Unsignalized[a]	D	25.6	C	19.9
13	Ashby Rd/SR 99 SB Ramps	Unsignalized[a]	B	10.9	B	11.3
14	Santa Fe Dr/E Bellevue Rd	Signalized	B	15.2	B	10.9
15	Santa Fe Dr/F St	Signalized	A	7.4	A	8.8
16	Santa Fe Dr/W Ave 2	Unsignalized[a]	C	15.0	B	13.8
17	Santa Fe Dr/N Franklin Rd	Signalized	B	17.0	B	16.0
18	Ashby Rd/N Franklin Rd	Unsignalized[b]	B	11.7	B	12.5
19	Santa Fe Dr/Belcher Ave	Unsignalized[a]	B	10.6	B	14.6
20	Santa Fe Dr/W Olive Ave/SR 59	Signalized	D	35.4	D	39.4
25	16th St / SR 59	Unsignalized[a]	C	16.3	F	>50
26	13th St - SR 99 SB Off-ramp / V St	Signalized	C	32.2	C	33.1
27	14th St - SR 99 NB On-ramp / V St	Signalized	B	18.6	B	18.0
28	15th St / V St	Signalized	B	16.7	C	25.0
29	16th St / V St	Signalized	C	21.5	C	27.0
30	13th St / R St	Signalized	B	14.3	B	15.0
31	SR 99 NB Off-ramp - 14th St / R Street	Signalized	B	20.0	B	19.0
32	15th St / R St	Signalized	B	17.1	C	25.2

	Intersection	Intersection Control	AM Peak Hour		PM Peak Hour	
			LOS	Delay (sec)	LOS	Delay (sec)
33	16th St / R St	Signalized	C	31.8	C	33.7
34	Olive Ave / R St	Signalized	D	50.9	E	56.2
35	15th St / O St	Unsignalized[b]	A	7.6	A	8.5
36	16th St / O St	Signalized	C	21.1	B	19.8
37	15th St / M St	Unsignalized[b]	B	11.0	B	12.7
38	16th St / M St	Signalized	C	32.9	C	33.7
39	Olive Ave / M St	Signalized	D	54.5	E	58.6
40	2nd St / Grogan Ave / Northwest Ave	Unsignalized[b]	A	9.8	B	10.0
41	Childs Ave / Martin Luther King Jr. Way	Signalized	D	39.2	D	41.2
42	13th St / Martin Luther King Jr. Way	Signalized	C	25.7	C	27.4
43	SR 99 SB Ramps / Martin Luther King Jr. Way	Unsignalized[a]	C	17.2	C	17.5
44	SR 99 NB Ramps / Martin Luther King Jr. Way	Unsignalized[a]	C	19.8	C	21.3
45	14th St / Martin Luther King Jr. Way	Unsignalized[a]	C	16.6	C	21.8
46	15th St / Martin Luther King Jr. Way	Signalized	B	12.4	B	14.8
47	16th St / Martin Luther King Jr. Way	Signalized	C	29.1	C	31.2
48	13th St / G St	Unsignalized[b]	B	12.9	C	15.4
49	SR 99 - 14th St / G St	Unsignalized[a]	B	15.0	C	17.5
50	16th St / G St	Signalized	C	31.4	C	32.8
51	Olive Ave / G St	Signalized	D	46.8	D	48.0
52	SR 99 SB On-ramp / Yosemite Pkwy (SR 140)	Unsignalized[a]	B	12.9	D	32.3
53	SR 99 SB Off-ramp / Yosemite Pkwy (SR 140)	Unsignalized[a]	E	43.9	F	>50
54	SR 99 NB Off-ramp / Yosemite Pkwy (SR 140)	Unsignalized[a]	F	>50	F	>50
55	Motel Dr / Glen Ave / Yosemite Pkwy (SR 140)	Signalized	D	42.6	D	36.9
56	14th St / O St	Unsignalized[a]	A	9.7	B	10.8
57	13th St / M St	Unsignalized[b]	B	12.7	C	15.8
58	14th St / M St	Unsignalized[a]	B	13.7	C	15.5
59	Main St / M St	Signalized	A	9.7	B	13.2
60	18th St / M St	Signalized	B	12.2	B	13.5
61	15th St / Canal St	Unsignalized[a]	B	10.3	B	12.3
62	16th St / Canal St	Unsignalized[a]	C	22.2	E	36.7

Intersection		Intersection Control	AM Peak Hour		PM Peak Hour	
			LOS	Delay (sec)	LOS	Delay (sec)
63	11th St / Martin Luther King Jr. Way	Unsignalized[a]	C	16.8	C	21.0
64	Main St / Martin Luther King Jr. Way	Signalized	A	9.5	A	9.9
65	18th St / Martin Luther King Jr. Way	Unsignalized[b]	A	7.7	A	8.0
66	16th St / H St	Unsignalized[a]	B	11.5	B	14.4
67	Main St / H St	Unsignalized[a]	A	10.0	B	10.9
68	15th St / G St	Unsignalized[a]	B	13.4	C	16.7
69	Main St / G St	Signalized	B	16.8	C	20.1
70	18th St / G St	Signalized	A	8.5	A	4.5
71	15th St / D St	Unsignalized[a]	B	14.3	B	11.5
72	16th St / D St	Unsignalized[a]	C	16.4	C	16.7

[a] One-way or two-way stop controlled intersection. LOS and delay reported for the worst movement.
[b] All-way stop controlled intersection, average delay reported.

As indicated in Table 4.10-1, 7 of the analyzed 72 intersections (Intersections 11, 25, 34, 39, 53, 54 and 62) operate at LOS E or F under AM and/or PM peak hour conditions.

4.10.2 Harris-DeJager HMF

4.10.2.1 Site Description

The Harris-DeJager HMF site is located north of Chowchilla, adjacent to and on the west side of UPRR corridor, along S Vista Road. The proposed site spreads is served by SR 99, Harvey Pettit Road, Plainsburg Road, and S Vista Avenue. Future access to the site would be provided by the new planned interchange on SR 99 at Plainsburg Road, which provides safe access to both east and west travel across SR 99.

4.10.2.2 Study Area

Five intersections were identified for analysis in the vicinity of the proposed Harris-DeJager HMF site location. These intersections are listed below and shown in Figure 4.10-4.

1) SR 59/E Sandy Mush Road
2) S Bliss Road/E Sandy Mush Road
3) SR 99/E Sandy Mush Road
4) Hemlock Road/SR 152
5) Road 13/SR 152

4.10.2.3 Intersection Operating Conditions

Intersection turning movement volumes were collected at all the study intersections around the proposed HMF site location in May 2010. These locations are presented in Figure 4.10-4. Intersection analysis was performed for the AM and PM peak hours.

Figure 4.10-5 presents existing geometry at the study intersections and Figure 4.10-6 presents the intersection volumes for the AM and PM peak hours. Based on the geometry and volumes presented in the figures, intersection analysis was performed using the Traffix software package. The results of the analysis are presented in Table 4.10-2. Intersection turning movement counts are presented in Appendix B and LOS calculation sheets are presented in Appendix C.

As indicated in Table 4.10-2, all intersections operate at LOS D or better under existing conditions except Intersection 3, SR 99/E Sandy Mush Road, which operates at LOS F in the AM and PM peak hours. Sandy Mush Road is currently an at-grade crossing with the SR 99 freeway, leading to poor operating conditions from heavy volumes on SR 99 during peak hours.

Table 4.10-2
Existing Intersection Operating Conditions – Harris-DeJager HMF

Intersection		Intersection Control	AM Peak Hour		PM Peak Hour	
			LOS	Delay (sec)	LOS	Delay (sec)
1	SR 59/E Sandy Mush Road	Unsignalized[a]	B	12.3	B	13.3
2	S Bliss Road/E Sandy Mush Road	Unsignalized[a]	A	8.7	A	8.7
3	SR 99/E Sandy Mush Road	Unsignalized[a]	F	>50	F	>50
4	Hemlock Road/SR 152	Unsignalized[a]	B	14.4	C	15.1
5	Road 13/SR 152	Unsignalized[a]	B	12.2	C	17.6

[a]One-way or two-way stop controlled intersection. LOS and delay reported for the worst movement.

Figure 4.10-4
Study Intersections – Harris-DeJager HMF

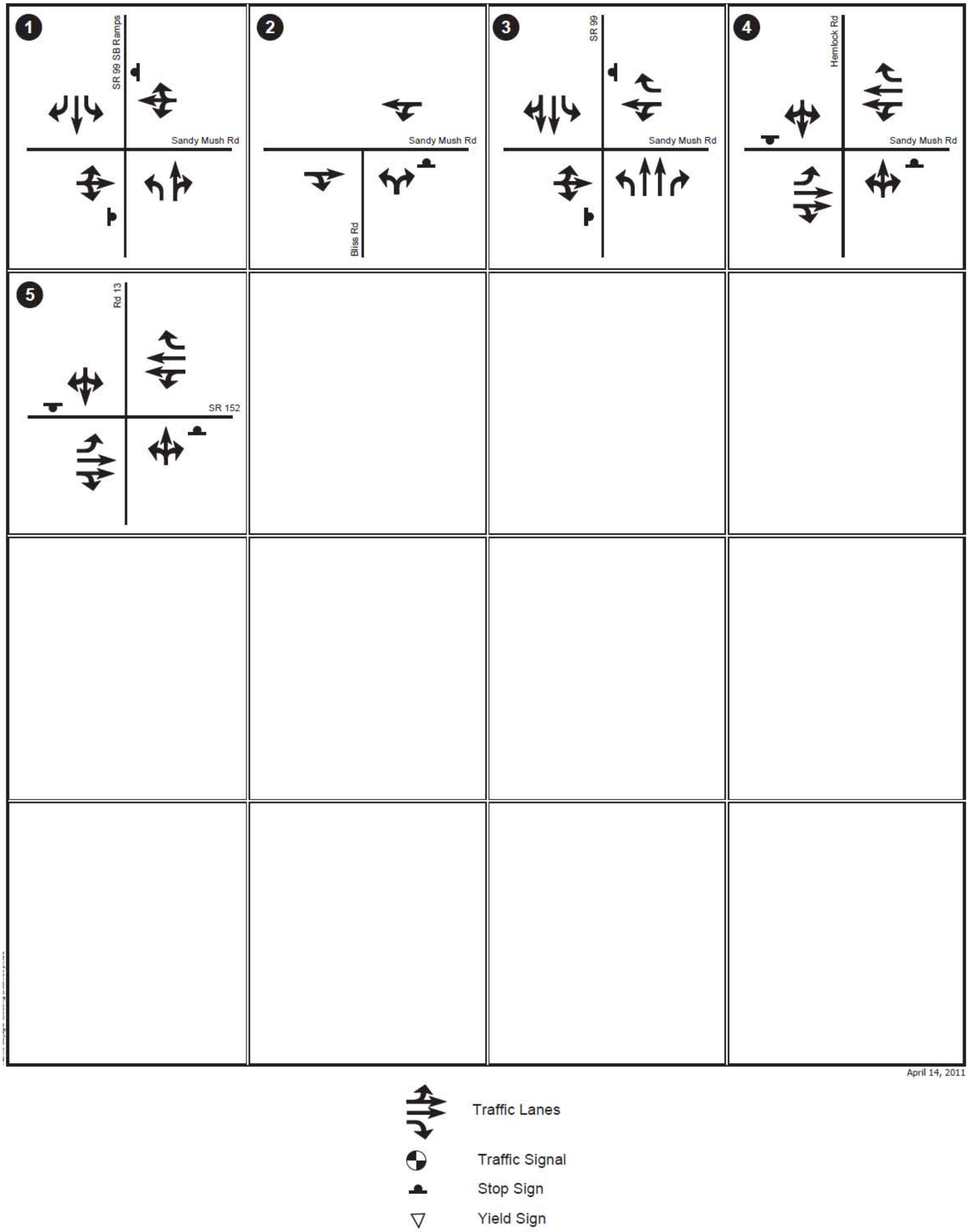
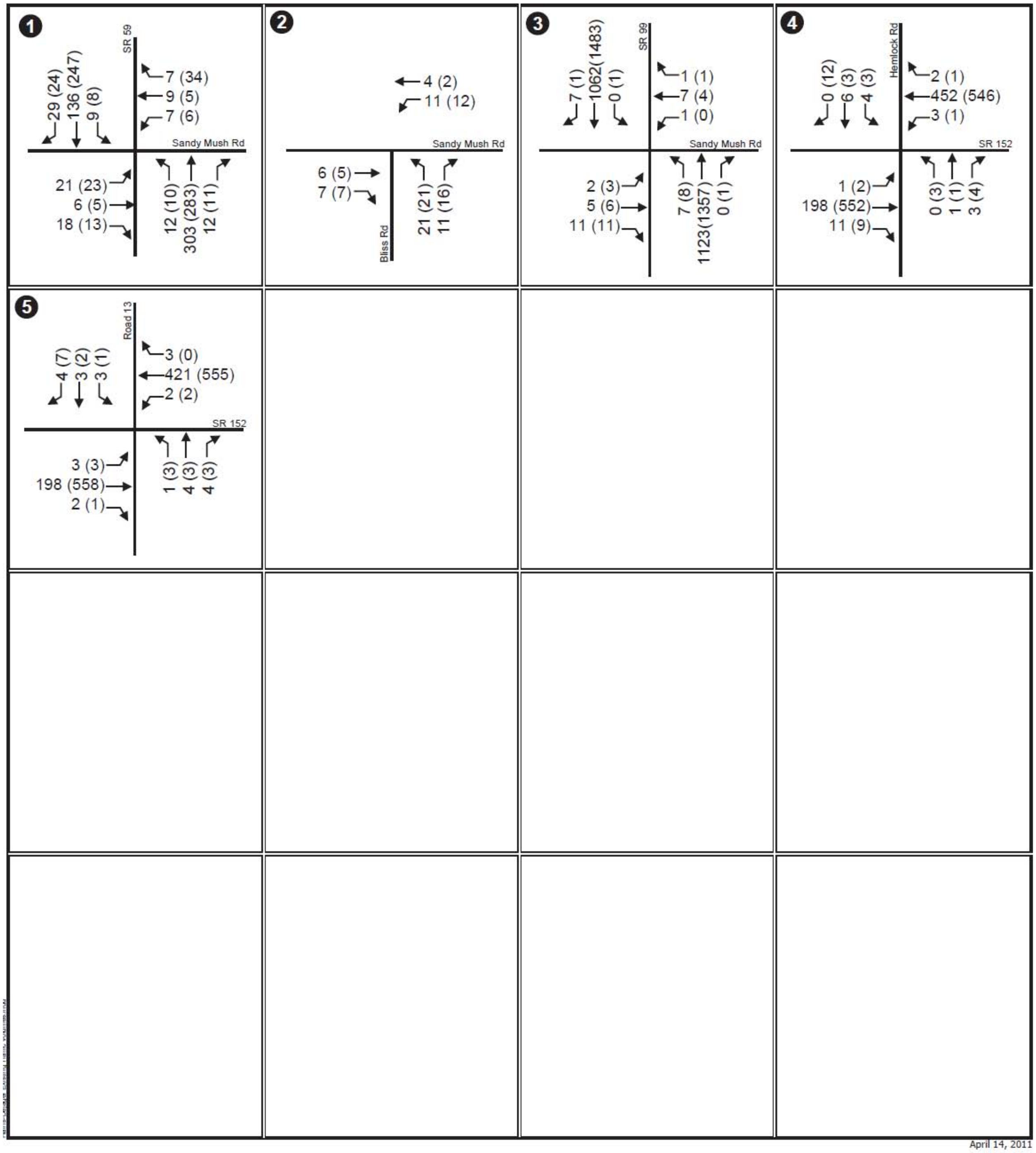


Figure 4.10-5
Existing Intersection Geometry – Harris-DeJager HMF



xx (xx) AM (PM) Peak Hour Volumes

Figure 4.10-6
Existing Intersection Volumes – Harris-DeJager HMF

4.10.3 Fagundes HMF

4.10.3.1 Site Description

The Fagundes HMF site is located adjacent to and on the north side of the Ave 24 Wye connection. The proposed site is served by SR 152, SR 233, Road 12, and Road 13 within Madera County.

4.10.3.2 Study Area

A total of eight intersections were identified for analysis in the vicinity of the proposed HMF site location. These intersections are listed below and shown in Figure 4.10-7.

1) Road 12/SR 152 – Avenue 23
2) Road 13/SR 152 – Avenue 23
3) SR 233/SR 152 EB Ramps
4) SR 233/SR 152 WB Ramps
5) SR 233/Avenue 24½
6) SR 233/Avenue 25
7) SR 99 Southbound Ramps/SR 233 – Avenue 26
8) SR 99 Northbound Ramps/SR 233 – Avenue 26

4.10.3.3 Intersection Operating Conditions

Intersection turning movement volumes were collected at the study intersections around the proposed HMF site location in May 2010. These locations are presented in Figure 4.10-7. Intersection analysis was performed for the AM and PM peak hours.

Figure 4.10-8 presents existing geometry at the study intersections and Figure 4.10-9 presents the intersection volumes for the AM and PM peak hours. Based on the geometry and volumes presented in the figures, intersection analysis was performed using the Traffix software package. The results of the analysis are presented in Table 4.10-3. Intersection turning movement counts are presented in Appendix B and LOS calculation sheets are presented in Appendix C. As indicated in Table 4.10-3, all intersections operate at LOS D or better under existing conditions.

Table 4.10-3
Existing Intersection Operating Conditions – Fagundes HMF

Intersection		Intersection Control	AM Peak Hour		PM Peak Hour	
			LOS	Delay (sec)	LOS	Delay (sec)
1	Road 12/SR 152 – Ave 23	Unsignalized[a]	A	9.8	B	14.9
2	Road 13/SR 152 – Ave 23	Unsignalized[a]	B	12.2	C	17.6
3	SR 233/SR 152 EB Ramps	Unsignalized[a]	A	9.5	A	9.6
4	SR 233/SR 152 WB Ramps	Unsignalized[a]	A	9.6	A	9.7
5	SR 233/Ave 24½	Unsignalized[a]	B	11.4	B	11.7
6	SR 233/Ave 25	Unsignalized[a]	C	15.4	C	16.4
7	SR 99 SB Ramps/SR 233 – Ave 26	Unsignalized[a]	C	22.4	C	20.6
8	SR 99 NB Ramps/SR 233 – Ave 26	Unsignalized[a]	D	30.1	D	27.1

[a] One-way or two-way stop controlled intersection. LOS and delay reported for the worst movement.

Figure 4.10-7
Study Intersections – Fagundes HMF

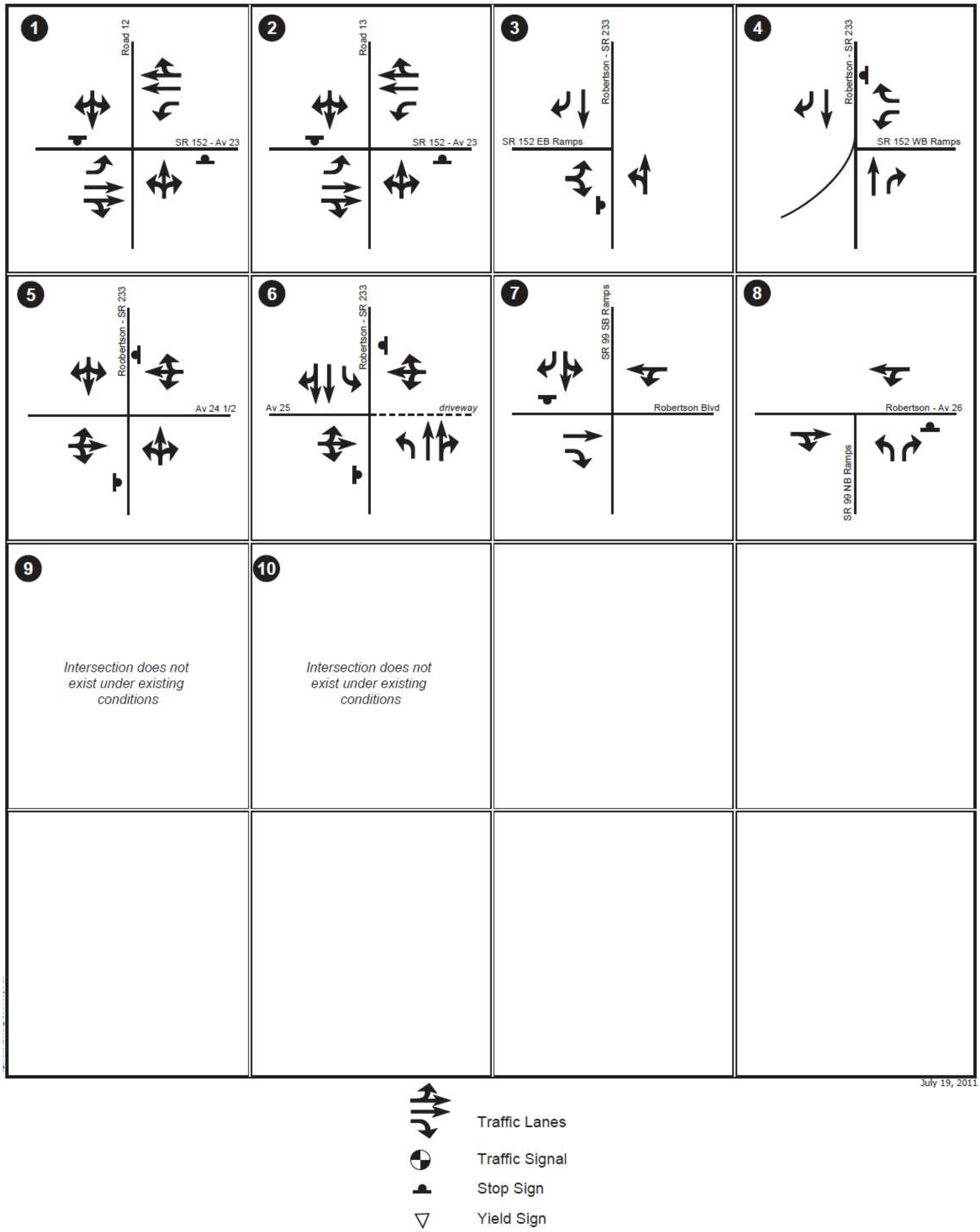
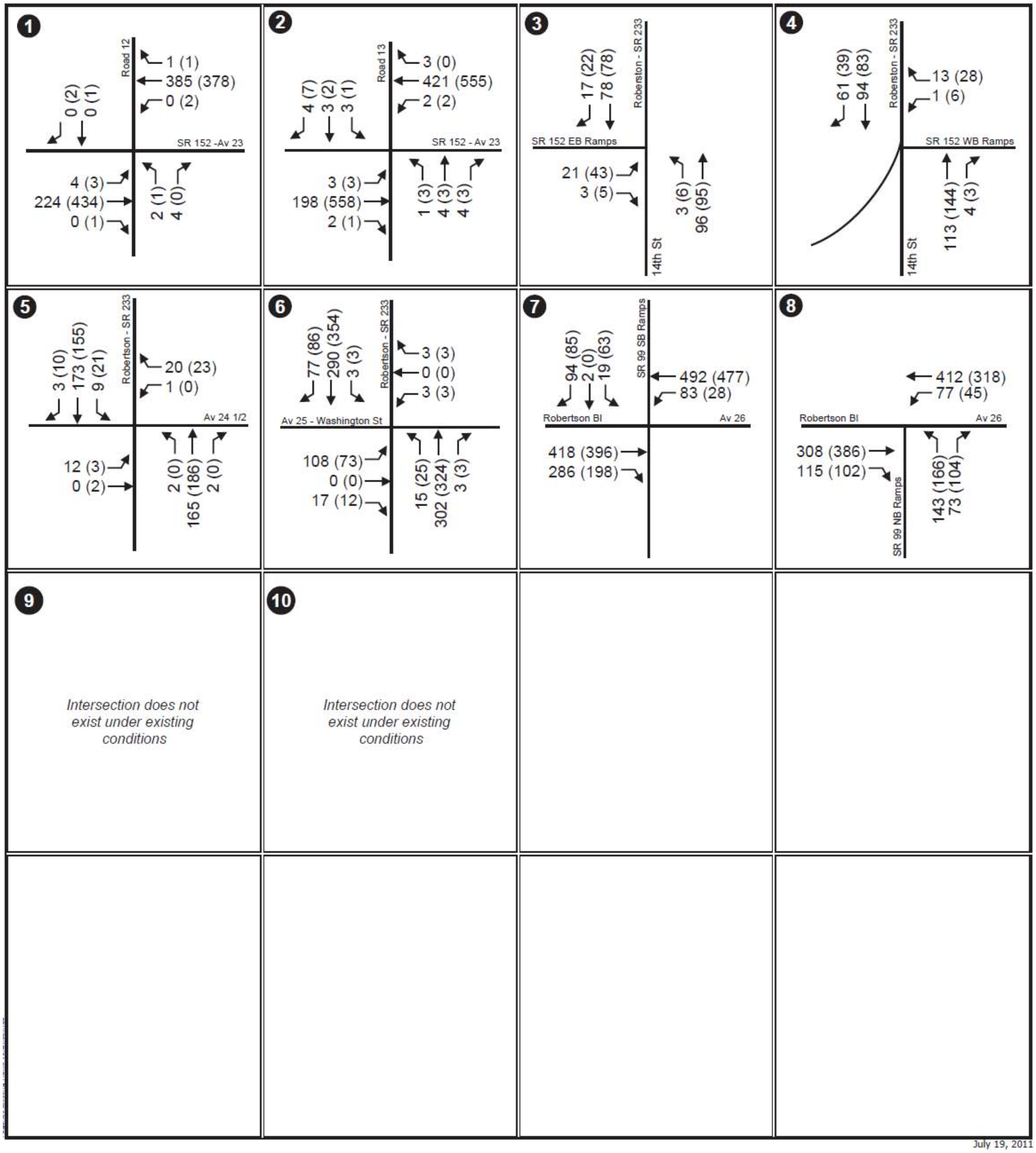


Figure 4.10-8
Existing Intersection Geometry – Fagundes HMF



xx (xx) AM (PM) Peak Hour Volumes

Figure 4.10-9
Existing Intersection Volumes – Fagundes HMF

4.10.4 Gordon-Shaw HMF

4.10.4.1 Site Description

The Gordon-Shaw HMF site is located adjacent to and on the west side of the SR 99/UPRR corridor. The proposed site is served by SR 99 interchanges at Avenue 20/22½ and Avenue 18.

4.10.4.2 Study Area

A total of seven intersections were identified for analysis in the vicinity of the proposed HMF site location. These intersections are listed below and shown in Figure 4.10-10.

1) SR 99 Southbound Ramps/Avenue 20½
2) SR 99 Northbound Ramps/Avenue 20½
3) Road 24/Avenue 20½
4) Road 24/Avenue 19
5) Road 24/Avenue 18½
6) SR 99 Southbound Ramps/Avenue 18½
7) SR 99 Northbound Ramps/Avenue 18½

4.10.4.3 Intersection Operating Conditions

Intersection turning movement volumes were collected at the study intersections around the proposed HMF site location in May 2010. These locations are presented in Figure 4.10-10. Intersection analysis was performed for the AM and PM peak hours.

Figure 4.10-11 presents existing geometry at the study intersections and Figure 4.10-12 presents the intersection volumes for the AM and PM peak hours. Based on the geometry and volumes presented in the figures, intersection analysis was performed using the Traffix software package. The results of the analysis are presented in Table 4.10-4. Intersection turning movement counts are presented in Appendix B and LOS calculation sheets are presented in Appendix C. As indicated in Table 4.10-4, all intersections operate at LOS D or better under existing conditions.

Table 4.10-4
Existing Intersection Operating Conditions – Gordon-Shaw HMF

Intersection		Intersection Control	AM Peak Hour		PM Peak Hour	
			LOS	Delay (sec)	LOS	Delay (sec)
1	SR 99 SB Ramps/Ave 20½	Unsignalized[a]	A	9.2	B	12.2
2	SR 99 NB Ramps/Ave 20½	Unsignalized[a]	A	10.0	A	9.5
3	Road 24/Ave 20½	Unsignalized[b]	A	7.2	A	7.3
4	Road 24/Ave 19	Unsignalized[a]	A	9.0	A	9.2
5	Road 24/Ave 18½	Unsignalized[a]	A	9.1	A	9.3
6	SR 99 SB Ramps/Ave 18½	Unsignalized[a]	B	13.4	C	16.6
7	SR 99 NB Ramps/Ave 18½	Unsignalized[a]	B	12.9	B	13.5

[a] One-way or two-way stop controlled intersection. LOS and delay reported for the worst movement.
[b] All-way stop controlled intersection, average delay reported.

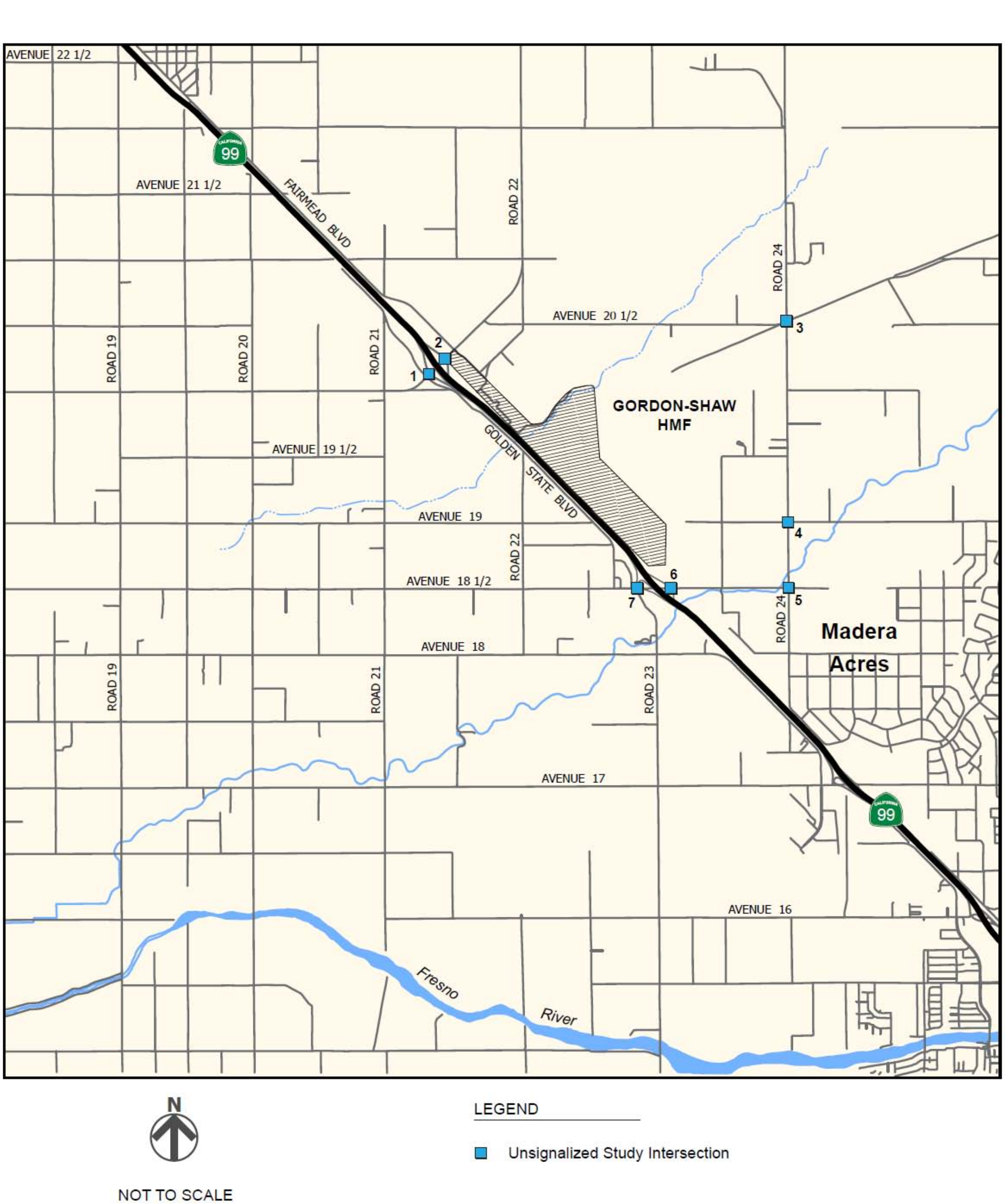


Figure 4.10-10
Study Intersections – Gordon-Shaw HMF

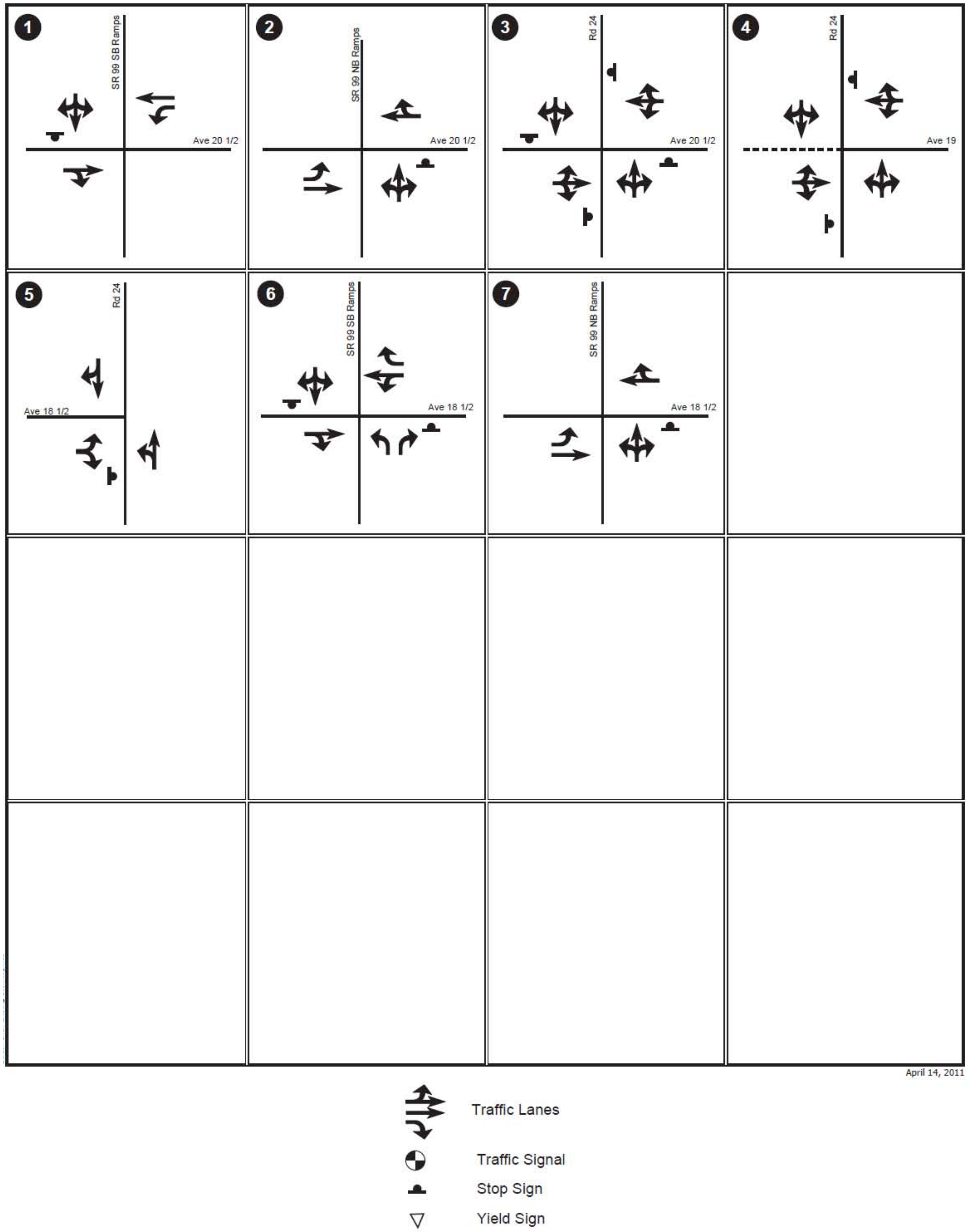
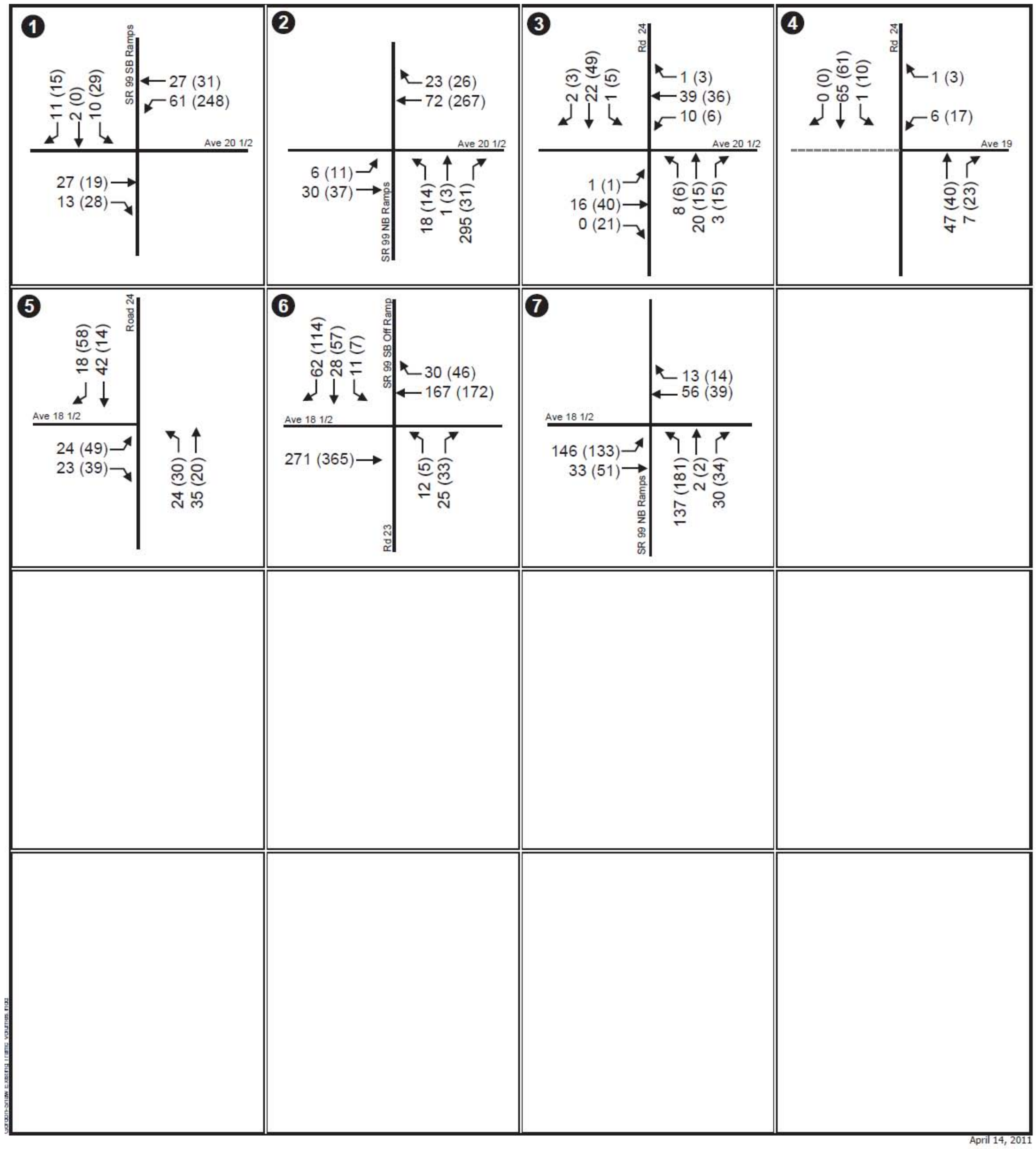


Figure 4.10-11
Existing Intersection Geometry – Gordon-Shaw HMF



xx (xx) AM (PM) Peak Hour Volumes

Figure 4.10-12
Existing Intersection Volumes – Gordon-Shaw HMF

4.10.5 Kojima Development HMF

4.10.5.1 Site Description

The Kojima Development HMF site is located east of Chowchilla, on the BNSF alignment. This site is located along Santa Fe Drive and Robertson Boulevard (Avenue 26). The site can be accessed from SR 99 via ramps at Avenue 26 and Avenue 24.

4.10.5.2 Study Area

A total of eight intersections were identified for analysis in the vicinity of the proposed Kojima Development HMF site location. These intersections are listed below and shown in Figure 4.10-13.

1) SR 99 Southbound Ramps/E Robertson Boulevard
2) SR 99 Northbound Ramps/E Robertson Boulevard
3) Road 19/Avenue 26
4) Santa Fe Drive/Avenue 26
5) Santa Fe Drive/Road 22
6) Road 22/Avenue 24
7) SR 99 Northbound Ramps/Avenue 24
8) SR 99 Southbound Ramps/Avenue 24

4.10.5.3 Intersection Operating Conditions

Intersection turning movement volumes were collected at all the study intersections around the proposed HMF site location in May 2010. These locations are presented in Figure 4.10-13. Intersection analysis was performed for the AM and PM peak hours.

Figure 4.10-14 presents existing geometry at the study intersections and Figure 4.10-15 presents the intersection volumes for the AM and PM peak hours. Based on the geometry and volumes presented in the figures, intersection analysis was performed using Traffix software. The results of the analysis are presented in Table 4.10-5. Intersection turning movement counts are presented in Appendix B and LOS calculation sheets are presented in Appendix C. As indicated in Table 4.10-5, all intersections operate at LOS D or better under existing conditions.

Table 4.10-5
Existing Intersection Operating Conditions – Kojima Development HMF

Intersection		Intersection Control	AM Peak Hour		PM Peak Hour	
			LOS	Delay (sec)	LOS	Delay (sec)
1	SR 99 SB Ramps/E Robertson Blvd	Unsignalized[a]	C	22.4	C	20.6
2	SR 99 NB Ramps/E Robertson Blvd	Unsignalized[a]	D	30.1	D	27.1
3	Road 19/Ave 26	Unsignalized[a]	A	8.9	A	9.0
4	Santa Fe Dr/Av 26	Unsignalized[a]	A	9.5	A	9.6
5	Road 22/Santa Fe Dr	Unsignalized[a]	A	8.6	A	8.5
6	Road 22/Ave 24	Unsignalized[a]	B	10.6	A	9.9
7	SR 99 NB Ramps/Ave24	Unsignalized[a]	B	12.6	B	11.4
8	SR 99 SB Ramps/Ave 24	Unsignalized[a]	B	12.4	B	11.0

[a] One-way or two-way stop controlled intersection. LOS and delay reported for the worst movement.

Figure 4.10-13
Study Intersections – Kojima Development HMF

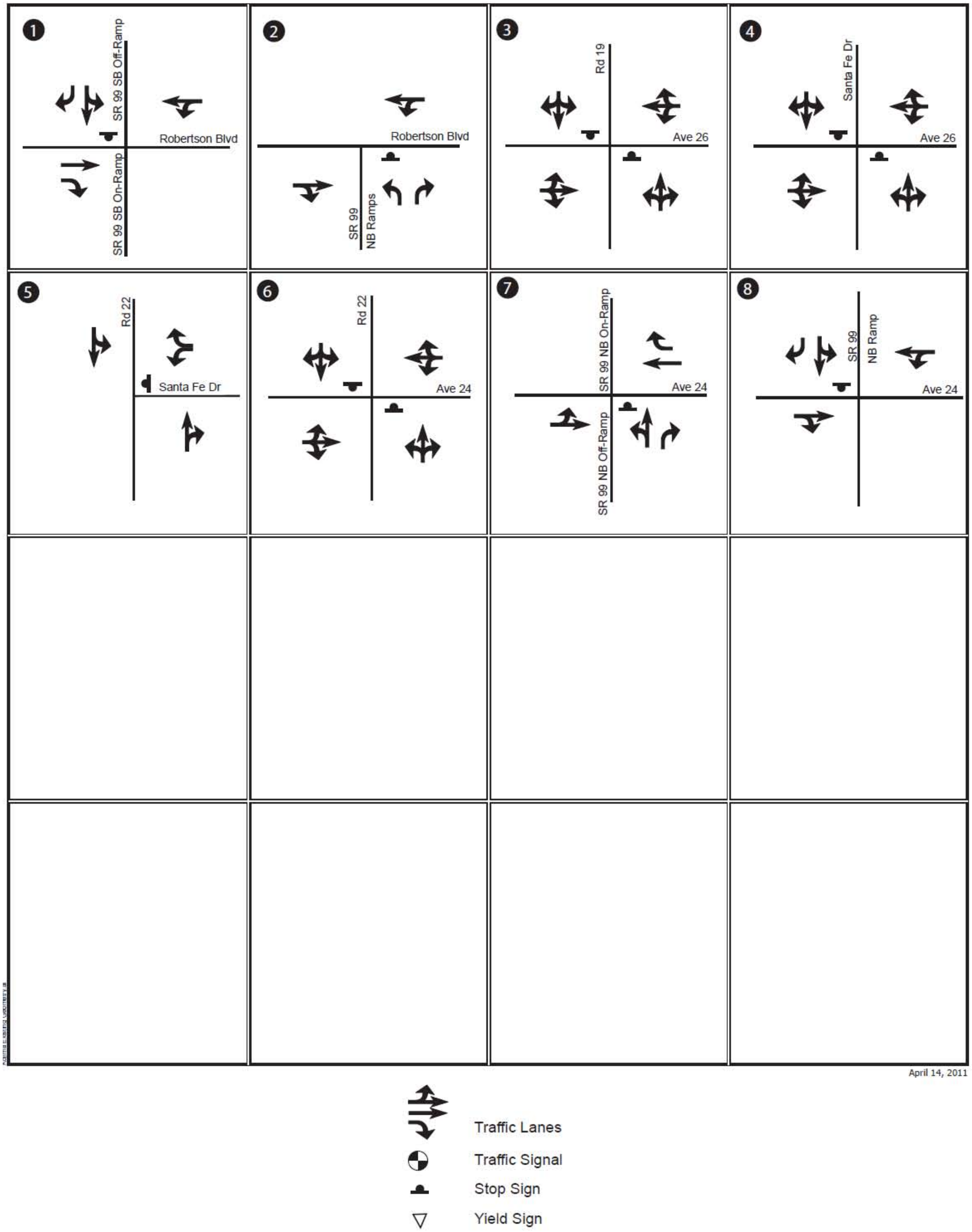
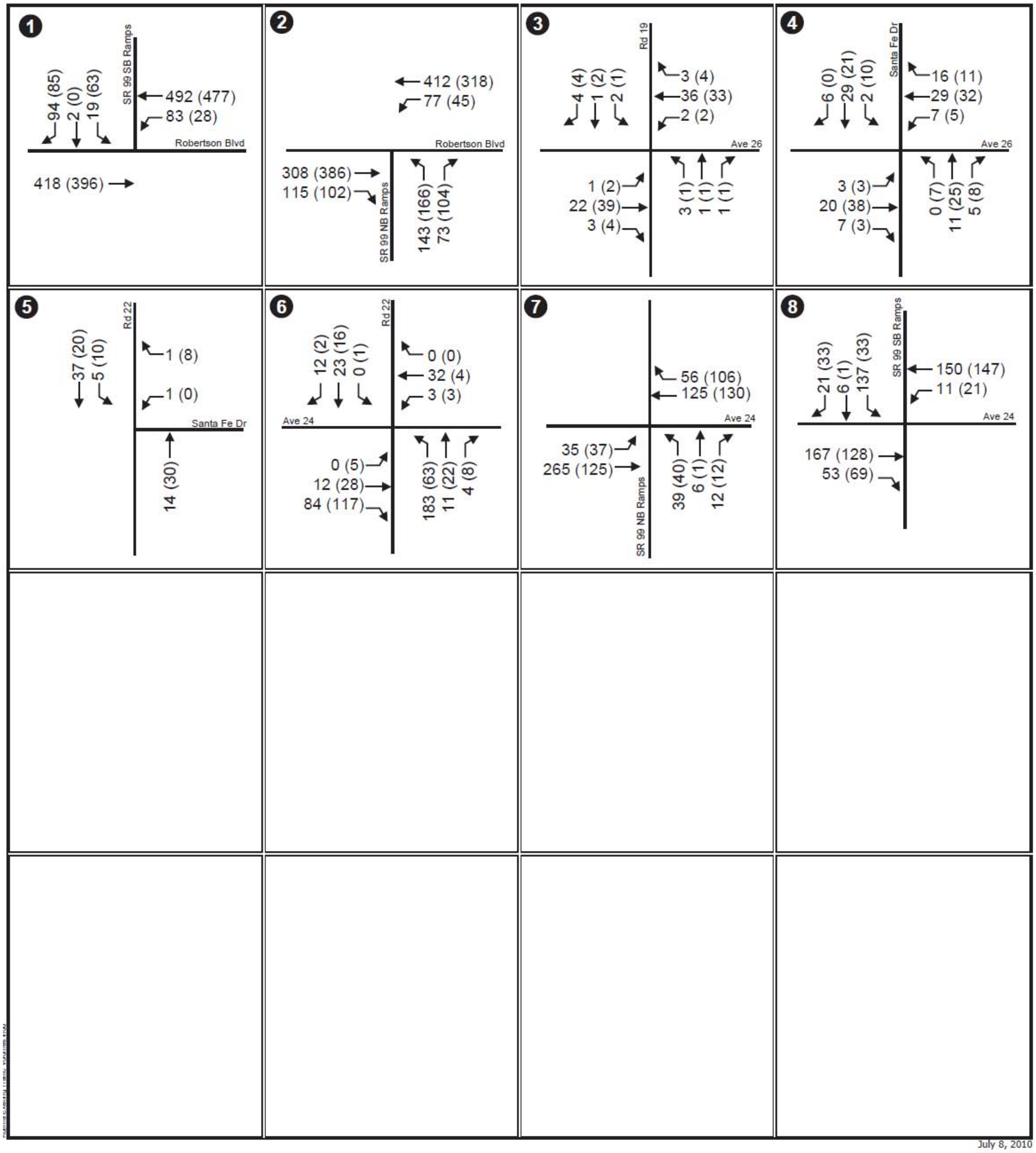


Figure 4.10-14
Existing Intersection Geometry – Kojima Development HMF



xx (xx) AM (PM) Peak Hour Volumes

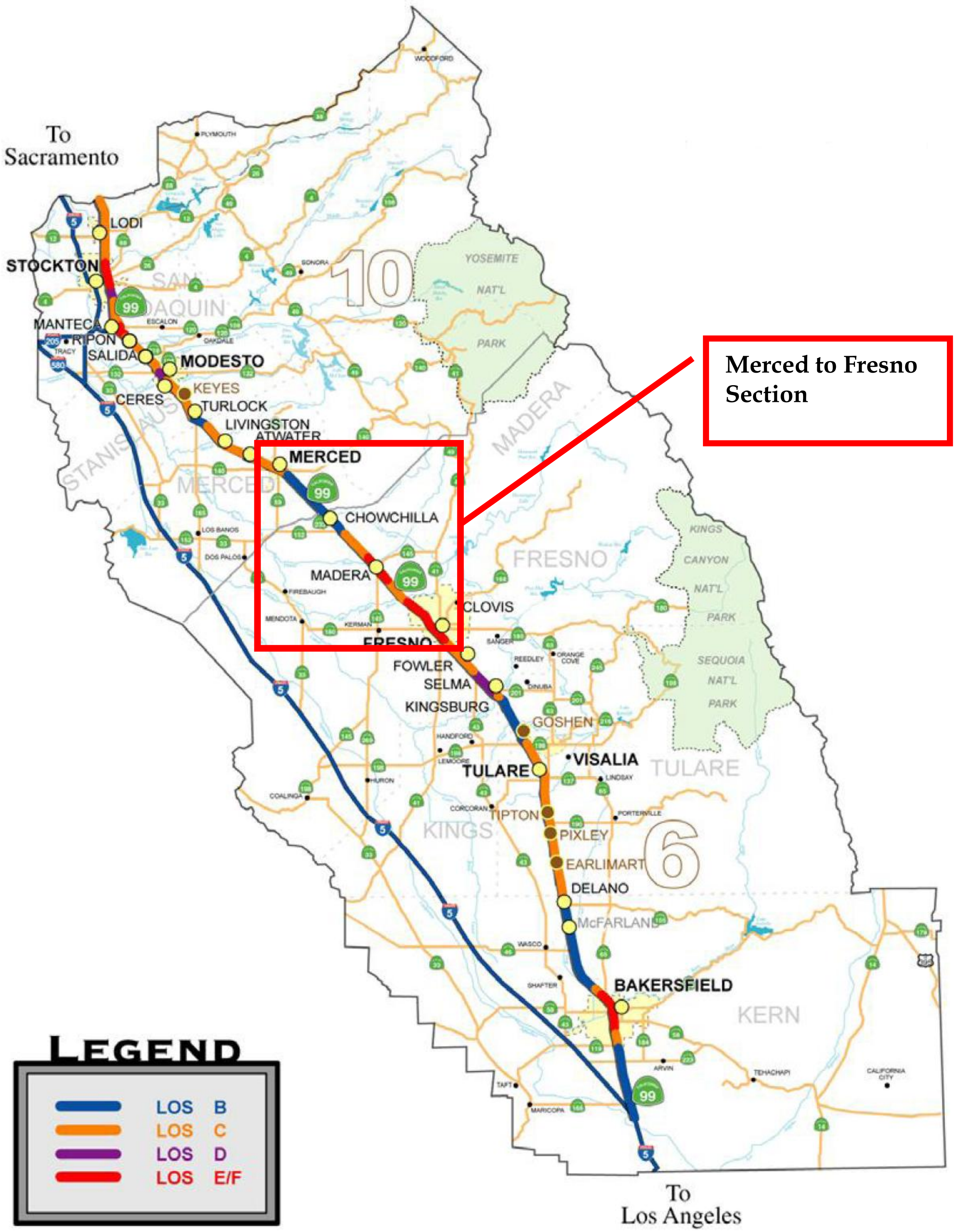
Figure 4.10-15
Existing Intersection Volumes – Kojima Development HMF

4.11 Freeway Analysis

SR 99 is the major north-south freeway serving the study area and the primary freeway facility that could be affected by the proposed project. This facility is currently designated as a four-lane freeway and expressway in Merced County, four-lane freeway in Madera County, and four- to six-lane freeway in Fresno County.

The current annual daily traffic volumes on SR 99 range from 38,000 to over 100,000. Figure 4.11-1 presents the 2007 LOS along the SR 99 corridor as identified in the Caltrans' Draft Updated *Route 99 Corridor Business Plan* (Caltrans 2009a). The figure indicates that the LOS ranges from LOS B to LOS E/F along the corridor.

As identified in Section 3.3.3, the RTPs for Merced, Madera, and Fresno counties establish an LOS standard of D for the entire regional road network. Any segment of the roadway that is worse than LOS D is considered to be a deficiency in the transportation system. Figure 4.11-1 shows that the minimum LOS standard is not met on SR 99 segments in Madera and Fresno counties under existing conditions.



Source: *Updated Route 99 Corridor Business Plan* (Caltrans 2009a).

Figure 4.11-1
2007 Level of Service along SR 99 Corridor

5.0 Future Year (2035) No Project Conditions

5.1 Introduction

The No Project Alternative is the basis for comparing the HST project alternatives. The No Project Alternative represents the state's transportation system (highway, transit, air, and conventional rail) as it is currently and as it would be after implementation of programs or projects that (1) are currently identified in RTPs, (2) have identified funds for implementation, and (3) are expected to be in place by 2035, the study's planning horizon. With respect to high-speed train service, the No Project Alternative presents conditions as they would be if the statewide HST system is not built. The No Project Alternative satisfies the statutory requirements under CEQA and NEPA for an alternative that does not include any new action or project beyond what is already committed. The No Project Alternative defines the existing and future intercity transportation system in the project area based on programmed and funded improvements through 2035, according to the following sources of information:

- State Transportation Implementation Program (STIP)
- RTPs, financially constrained projects for all modes of travel
- Airport Master Plans
- Intercity passenger rail plans

The following is an analysis of the No Project Alternative for transportation movements, which incorporated the anticipated increase in travel patterns for the projected increase in population and employment. According to a statewide transportation projection conducted by Cambridge Systematics, the three-county region is projected to increase from 35 million to almost 50 million miles traveled per year in 2035 (Cambridge Systematics 2007). This establishes the background for the following assessment of the transportation infrastructure. The No Project Alternative includes highway, aviation, and conventional passenger rail elements, as discussed below.

5.1.1 Highway Element

The No Project Alternative includes the existing highway system as well as funded and programmed improvements. The identification of improvements on the highway network is based on financially constrained RTPs developed by regional transportation planning agencies. Intercity highway improvements included as part of the No Project Alternative include infrastructure projects and other potential system improvements programmed to be in operation by 2035. The improvements consist primarily of individual interchange improvements and roadway widening projects on segments of the highway network. As such, the improvements do not cumulatively add considerable lane capacity to the highway system. The major highway improvements included as part of the No Project Alternative are identified by county in Table 5.1-1.

The *Updated Route 99 Corridor Business Plan* (Caltrans 2009a) claims that safety and capacity improvements of a minimum 6-lane for the SR 99 for the entire corridor will result in congested conditions (exemplified by stop and go conditions) by 2030. Outside of SR 99 plans, the planned highway improvements in the No Project Alternative will partially address the growth in travel, but will not add substantial capacity to the system. The region's residents will experience congested travel conditions that will persist for longer periods of time, as more drivers adjust their time of travel to avoid the most heavily congested commute hours. These improvements represent incremental solutions to capacity constraints on the regional road network, but would not provide the needed capacity to address anticipated regional growth that meet Caltrans traffic movement minimum standards. The specific levels of service for the No Project are reported as a point of comparison for the HST Alternatives at key locations with respect to the project corridor.

Table 5.1-1
No Project Roadway Improvements

No.	County	Route	Description
1	Merced	SR 99	Convert to 6-lane freeway north of Atwater
2	Merced	SR 99 SR 59	Atwater-Merced Expressway - new 4 lane road; realign SR 59; new interchanges at SR 99 and Santa Fe
3	Merced	SR 99	Widen freeway to 6 lanes (Atwater thru Downtown Merced) and upgrade downtown interchanges
4	Merced	SR 99	Interchange improvements at SR 140
5	Merced	SR 140	Upgrade from Parsons Ave to Tower Rd
6	Merced	SR 99	New interchange at Mission (completed)
7	Merced		Campus Parkway - new road from SR 99 to Yosemite Ave (3 phases)
8	Merced	SR 99	Convert to 6-lane freeway (McHenry to Buchanan Hollow); new interchange at Arboleda Road
9	Merced	SR 99	Convert to 6-lane freeway (Buchanan Hollow to Madera Co. line); new interchange at Plainsburg Rd
10	Madera	SR 99	Reconstruct interchange at SR 233
11	Madera	SR 99	Convert to 6-lane freeway (Merced County line to SR 152); reconstruct interchange at Avenue 24
12	Madera	SR 99	Construct new interchange at SR 152
13	Madera	SR 99	Widen freeway to 6 lanes (SR 152 to south of Avenue 21½); new interchange at Avenue 21½ (completed)
13A	Madera	SR 99	Widen freeway to 6 lanes (Avenue 21½ to Avenue 17)
14	Madera	SR 99	Convert to 6-lane freeway (Avenue 17 to Ellis St); reconstruct interchange at Avenue 17
15	Madera	SR 99	Convert to 6-lane freeway (Ellis to Avenue 12); Ellis St extension and overpass at SR 99 (Ph. 1); interchange (Ph. 2)
16	Madera	SR 99	Reconstruct interchange at 4th St; widen 4th to 4 lanes across UPRR
17	Madera	SR 99	Interchange improvements at SR 145
18	Madera	SR 145	Widen to 4 lanes (SR 99 to Yosemite)
19	Madera	SR 99	Reconstruct interchange at Avenue 12
20	Madera	SR 99	Convert to 6-lane freeway (Avenue 17 to Avenue 7)
21	Madera/Fresno	SR 99	Convert to 6-lane freeway (Avenue 7 to Ashlan Ave)
22	Fresno	SR 99	New Veterans Blvd extension with new interchange at SR 99 and overcrossing of UPRR and Golden State
23	Fresno	SR 99	Construct interchange at Grantland
24	Fresno	SR 99	Widen to 10 lanes (Ashlan to Clinton) - 2 phases
25	Fresno	SR 41	SB auxiliary lane (El Paso to Friant)
26	Fresno	SR 41	NB auxiliary lane (Bullard to Herndon)
27	Fresno	SR 99	Interchange improvements at Shaw Avenue
28	Fresno	SR 41	NB auxiliary lane (Ashlan to Shaw)
29	Fresno	SR 41	Auxiliary lanes (O Street to Shaw)
30	Fresno	SR 41	Widen interchange ramps (McKinley to Shields)
31	Fresno	SR 180	Braided ramps (SR 41 to SR 168)
32	Fresno	SR 99	Update closed bridge structure

5.1.2 Regional Bus Service

Existing regional bus service includes Greyhound and YARTS. While intercity bus service is likely to increase in the future, there are no documented plans for service expansion. Continued service is an element of the No Project Alternative, though these bus lines serve only a very small portion of the intercity travel market. It is expected that demand would grow as population growth occurs; however, some service reliability would be sacrificed due to increased congestion anticipated on SR 99.

5.1.3 Aviation Element

Statewide, the airport development process is distinct from the highway and rail development processes and is not documented in local plans, RTPs, or the STIP. For this analysis and to conceptualize a No Project airport system, proposed airport improvements were evaluated based on a review of available documented plans. An airport improvement is deemed likely to be implemented and operational by 2035 if the improvement has been identified in an approved or under-development airport master planning program, an environmental document, a regional aviation system planning document, or a capital improvement program.

The air transportation system evaluated under the No Project Alternative consists of MCE and FAT, airports that currently provide commercial service in the Merced to Fresno study area. The airports do not necessarily provide commercial service between the same intercity markets as the proposed HST system.

Improvement plans for MCE are documented in the 2007 Merced Municipal Airport Master Plan. The plan forecasts (in 2026) a baseline increase in enplaning passengers to 53,000 annual passengers, with a low forecast of 14,800 passengers. The primary facility improvement recommended in the plan is a new 11,000-square-foot passenger terminal, which is projected to be completed in 2011.

Eight carriers at FAT provide direct domestic service to most airport hubs in the west and direct international flights to Guadalajara, Mexico. In 2008, the airport served 600,070 passengers, or approximately 2,000 per average weekday. The airport terminal includes a recently remodeled lobby and a two-story concourse that retains the current six-gate operation.

Future improvement plans for FAT are documented in the 2006 Fresno Airport Master Plan (AMP). The AMP projects growth in airport usage, estimating 852,000 enplanements in 2025 (a 40% increase). Total aircraft operations are estimated to increase 20%. To meet this demand, the AMP identifies needed facility improvements, which include short-term (by 2014) projects such as lengthening and widening the secondary runway, rehabilitating and extending taxiways, and other site improvements. The AMP also includes longer term (2015-2025) planned improvements such as performing additional taxiway rehabilitation and installing an Instrument Landing System for the secondary runway. No additional gates are needed or planned.

5.1.4 Freight Rail

Two Class I freight railroads (BNSF and UPRR) operate along the corridor's length and serve the Merced-Fresno corridor. The San Joaquin Valley lines for both BNSF and UPRR are important segments of their national rail systems. Freight rail traffic nationally has been growing, with a 31.4% increase in ton-miles of freight activity between 1997 and 2007 (U.S. Department of Transportation 1999, 2004, 2009). A 2002 American Association of State Highway and Transportation Officials (AASHTO) report projected a further 67% increase by 2020. Freight movements in the San Joaquin Valley are primarily inter-state.

Both railroads are currently operating near capacity; according to the 2009 Goods Movement Study (Caltrans 2010a), without major improvements (such as double tracking more sections), freight activity may exceed capacity by 2035, with minimal additional train movements. UPRR and BNSF railroads have historically added capacity when needed to meet market demands in other regions and UPRR has conveyed a desire to do so in areas of California. These future improvements are expected to continue to provide sufficient capacity for interstate needs.

5.1.5 Conventional Passenger Rail Element

Existing intercity passenger rail service in California is provided on four principal corridors covering more than 1,300 route miles and spanning almost the entire state. The No Project passenger rail network for this segment includes one of these corridors, the San Joaquin Route.

The California State Rail Plan (2007/8 – 2017/18) envisions an increase in San Joaquin service to eight daily roundtrips by 2018 compared to six under existing conditions, carrying 1,430,000 annual riders (819,000 riders in 2007), or approximately 4,765 per average weekday, with a projected on-time performance rate of 90% (the existing rate is 67.9%). This plan also seeks to reduce the travel time (Bakersfield to Oakland) to below 6 hours, a reduction of about 10 to 15 minutes from today's train travel times (Caltrans 2008). The plan would only slightly reduce Merced to Fresno travel time (less than 5 minutes).

The San Joaquin Corridor currently shares track with the BNSF freight line on a route running east of SR 99. There are existing stations in Merced, Madera, and Fresno. This corridor serves a portion of the same intercity markets as the proposed HST Alternative.

The California State Rail Plan identifies improvements that will expand service and help improve service reliability. However, with increased freight demand, capacity issues will likely persist beyond the 2020 timeframe of the plan. The No Project Alternative includes the following intercity passenger rail system improvements identified in the STIP and the Caltrans California State Rail Plan for implementation prior to 2020:

- Increased track capacity through double-tracking critical areas where trains frequently pass each other.
- New rolling stock.
- Grade-crossing improvements.
- Track and signal improvements.
- Construction of a new, relocated station in Madera.

5.2 Methodology

Future No Project conditions are based on the Merced, Madera, and Fresno county transportation demand models. The models are developed and maintained by the individual counties and are used to predict the impact of travel growth and evaluate potential transportation improvements.

To the extent possible, the county models coordinate with the Statewide Travel Model. The Statewide and county models generally use the same population and employment source information, although there may be some variance because the models were developed in different years. The local models also distribute the data to smaller analysis zones. The Statewide Travel Model has also been used by some counties, such as Merced, to provide external and through trip estimates. The 2035 No Project condition volumes for the study area stations and heavy maintenance facilities were determined by using the growth factors obtained from the individual county models. The base calibration year volumes were compared with future year (2035) volumes to obtain the growth factors for each study area. The existing intersection volumes are then multiplied by the growth factors to arrive at the future year (2035) No Project volumes.

5.3 Roadway and Intersection Operations along Alternatives

Analysis focused on areas where there is the greatest expected change in roadway operations. These areas include the Downtown Merced and Fresno HST stations and operations that would be affected by the proposed realignment of SR 99.

5.3.1 Fresno Area between Herndon and Shaw Avenues

Future roadway improvements in the vicinity of the proposed HST alignment in Fresno between Herndon and Shaw Avenues include the following, also shown on Figure 4.3-1:

- Construction of Veterans Boulevard between Grantland Avenue to the west of SR 99 and Herndon/Polk Avenue to the east, with interchange at SR 99.
- Veterans Boulevard connection to Golden State Boulevard and Bullard Avenue.
- Widening on Shaw Avenue to three lanes in each direction.

Because of the new roadway connection via Veterans Boulevard, this roadway segment and its intersections at Golden State Boulevard and Bullard Avenue were analyzed under future conditions.

5.3.1.1 Roadway Analysis

The future year (2035) No Project condition roadway volumes were developed based on the methodology presented in Section 5.2. Based on future geometry and future year (2035) No Project volumes, roadway analysis was performed. The result of the roadway segment analysis is presented in Table 5.3-1. LOS calculation sheets are presented in Appendix C.

Table 5.3-1
Future Year (2035) Roadway Segment Analysis –
Fresno Area Between Herndon and Shaw Avenues

No.	Roadway Segment	ADT	Number of Lanes (N/E or S/W)	Divided/ Undivided	LOS
1	Golden State Blvd (North of Carnegie Ave)	21,210	2/2	Undivided	B
2	Bullard Ave (North of Dante Ave)	16,620	2/2	Divided	C
3	Gates Ave (between Figarden Dr and Shaw Ave)	14,595	2/2	Undivided	B
4	Shaw Ave (between Golden State Blvd and Brawley Ave)	57,305	3/2	Divided	F
5	Veterans Blvd (between Golden State Blvd and Bullard Ave)	70,090	3/3	Divided	F

As indicated in Table 5.3-1, two of the five analyzed roadway segments operate at LOS F under future conditions.

5.3.1.2 Intersection Analysis

The future year (2035) No Project condition intersection volumes were developed based on the methodology presented in Section 5.2. Figure 5.3-1 presents the future geometry and Figure 5.3-2 presents the 2035 No Project AM and PM peak hour volumes at the study intersections.

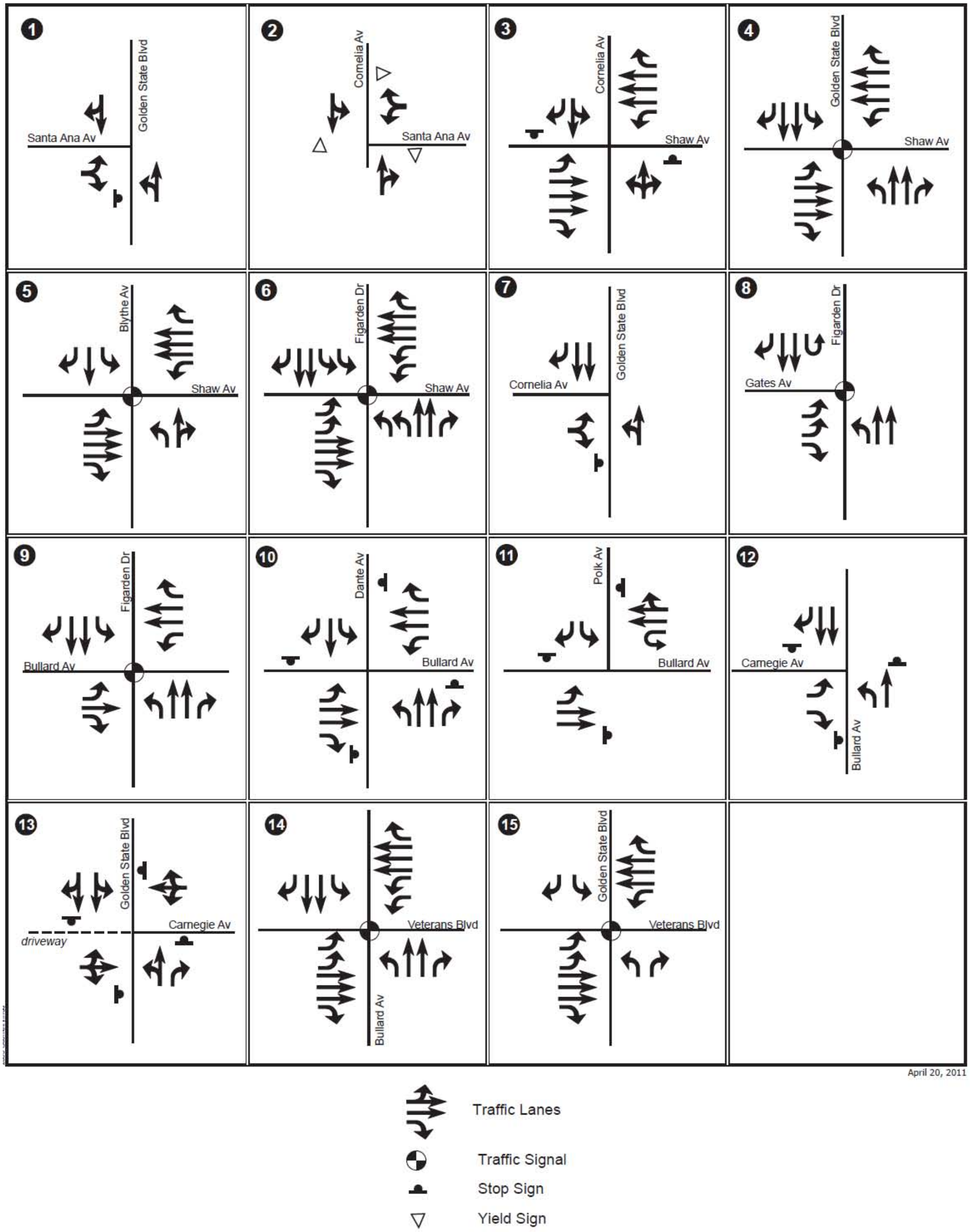
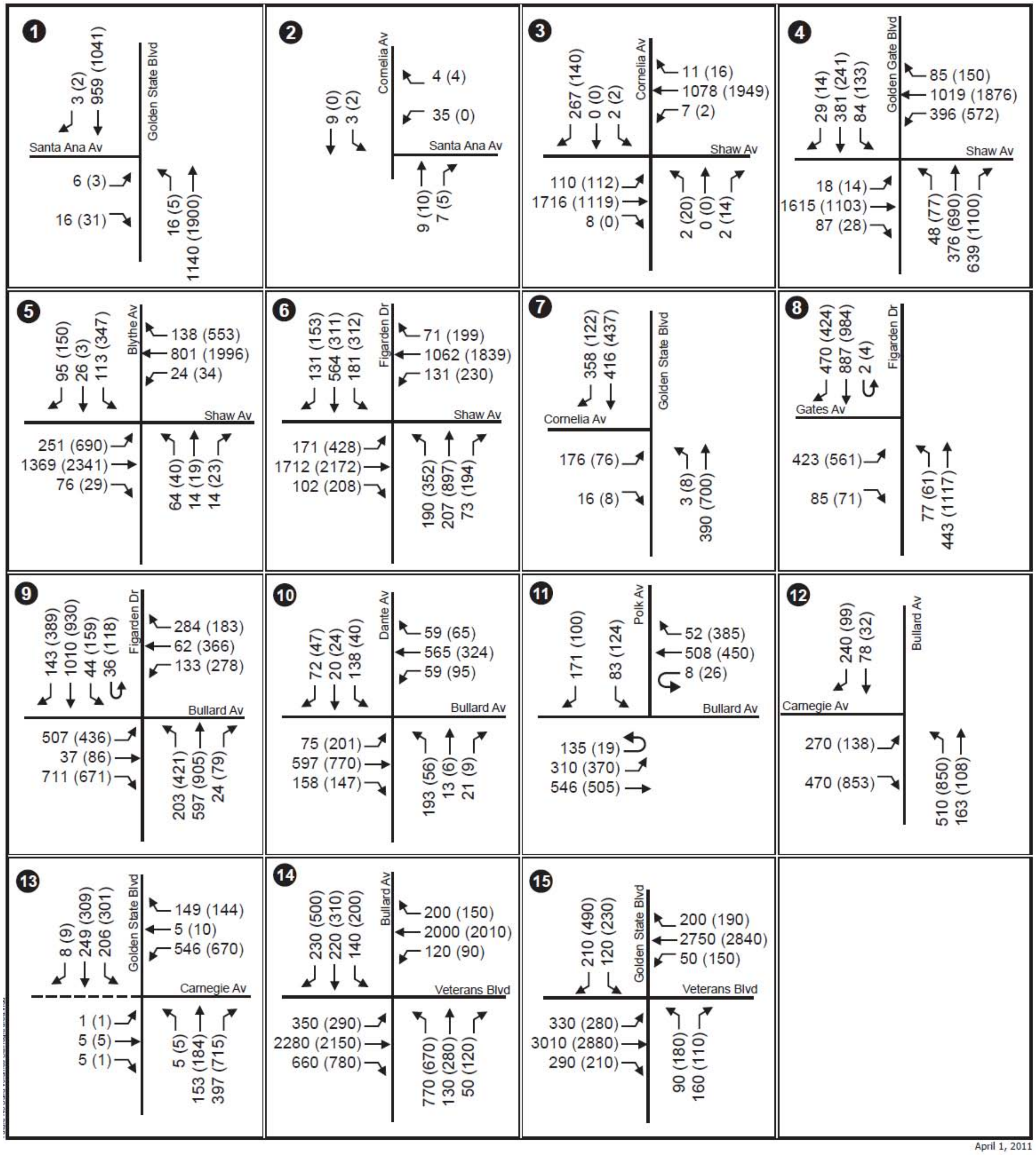


Figure 5.3-1
Future Year (2035) Intersection Geometry – Fresno Area between Herndon and Shaw Avenues



xx (xx) AM (PM) Peak Hour Volumes

Figure 5.3-2
Future Year (2035) Intersection Volumes – Fresno Area between Herndon and Shaw Avenues

Based on the future geometry and volumes, intersection analysis was performed for both the peak hours. The results of the analysis are presented in Table 5.3-2. LOS calculation sheets are presented in Appendix C.

Table 5.3-2
Future Year (2035) No Project Intersection Operating Conditions – Fresno Area Between Herndon and Shaw Avenues

	Intersection	Intersection Control	AM Peak Hour		PM Peak Hour	
			LOS	Delay (sec)	LOS	Delay (sec)
1	Golden State Blvd/Santa Ana Ave	Unsignalized[a]	E	48.2	F	>50
2	Cornelia Ave/Santa Ana Ave	Unsignalized[a]	A	7.2	A	6.8
3	Cornelia Ave/Shaw Ave	Unsignalized[a]	F	>50	F	>50
4	Golden State Blvd/Shaw Ave	Signalized	E	75.9	F	>80
5	Blythe Ave/Shaw Ave	Signalized	E	55.2	F	>80
6	Brawley Ave/Shaw Ave	Signalized	D	44.5	F	>80
7	Cornelia Ave/Golden State Blvd	Unsignalized[a]	E	40.6	F	>50
8	Figarden Dr/Gates Ave	Signalized	B	18.9	C	21.2
9	Figarden Dr/Bullard Ave	Signalized	F	>80	F	>80
10	Dante Ave/Bullard Ave	Unsignalized[b]	D	25.6	C	17.5
11	Polk Ave/Bullard Ave	Unsignalized[b]	E	36.6	D	31.1
12	Carnegie Ave/Bullard Ave	Unsignalized[b]	E	44.4	F	>50
13	Golden State Blvd/Carnegie Ave	Unsignalized[b]	F	>50	F	>50
14	Veterans Blvd/Bullard Ave	Signalized	E	74.1	E	72.4
15	Veterans Blvd/Golden State Blvd	Signalized	C	27.3	E	80.0

Notes:
[a] One-way or two-way stop controlled intersection. LOS and delay reported for the worst movement.
[b] All-way stop controlled intersection, average delay reported.

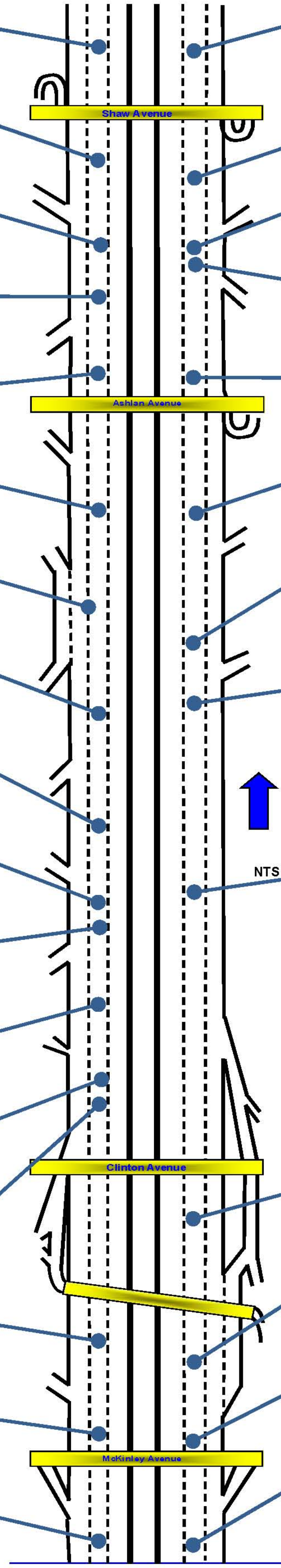
As indicated in Table 5.3-2, all intersections operate at LOS E or worse under AM and/or PM peak hours except Intersection 2, Cornelia Ave/Santa Ana Ave; Intersection 8, Figarden Dr/Gates Avenue; and Intersection 10, Dante Avenue/Bullard Avenue, which operate at LOS D or better under 2035 Future No Project conditions during both AM and PM peak hours.

5.3.2 SR 99 Proposed Realignment in Fresno (Ashlan Avenue to Clinton Avenue)

This section presents the future year (2035) No Project analysis of the freeway segments and intersections in the vicinity of the proposed SR 99 realignment in Fresno from Ashlan Avenue to Clinton Avenue.

5.3.2.1 SR 99 Freeway Segment Analysis

For the study area affected by the proposed shift of SR 99 to accommodate the HST alignment, Figure 5.3-3 summarizes the freeway volume, density (passenger cars/mile/lane [pc/mi/ln]), and LOS along SR 99 during the AM and PM peak hours for the No Project scenario. Each freeway study segment is also labeled with the type of HCM analysis method that was performed (i.e., basic, merge/diverge, or



North of Shaw Off-ramp — Basic

	Volume	Density	LOS
AM	3,185	18.4	C
PM	3,326	19.2	C

Between Shaw Ramps — Merge

	Volume	Density	LOS
AM	3,185	20.2	C
PM	3,327	20.9	C

Shaw to Ashlan — Merge

	Volume	Density	LOS
AM	4,405	28.6	D
PM	4,585	29.7	D

Shaw to Ashlan — Diverge

	Volume	Density	LOS
AM	4,405	30.5	D
PM	4,585	31.7	D

Between Ashlan Ramps — Basic

	Volume	Density	LOS
AM	3,927	22.7	C
PM	3,937	22.8	C

Ashlan to Golden State — Merge

	Volume	Density	LOS
AM	4,723	29.8	D
PM	4,560	27.4	C

Golden State to Dakota — Weave

	Volume	Density	LOS
AM	5,895	29.7	C
PM	5,666	29.7	C

Dakota to Shields — Diverge

	Volume	Density	LOS
AM	5,763	36.6	E
PM	5,333	34.8	D

Between Shields Ramps — Basic

	Volume	Density	LOS
AM	5,422	33.3	D
PM	5,019	29.8	D

Shields to Princeton — Merge

	Volume	Density	LOS
AM	6,150	37.6	E
PM	5,675	35.0	D

Shields to Princeton — Diverge

	Volume	Density	LOS
AM	6,150	39.0	E
PM	5,675	35.9	E

Between Princeton Ramps — Basic

	Volume	Density	LOS
AM	6,089	41.6	E
PM	5,647	35.7	E

Princeton to Clinton — Merge

	Volume	Density	LOS
AM	6,207	37.1	E
PM	5,746	33.6	D

Princeton to Clinton — Diverge

	Volume	Density	LOS
AM	6,207	40.0	E
PM	5,746	38.1	E

Clinton to Parkway — Basic

	Volume	Density	LOS
AM	4,966	29.4	D
PM	4,573	26.6	D

Parkway to McKinley — Merge

	Volume	Density	LOS
AM	6,084	38.2	E
PM	5,520	34.8	D

South of McKinley — Merge

	Volume	Density	LOS
AM	6,711	42.1	F
PM	5,953	36.4	E

North of Shaw Off-ramp — Merge

	Volume	Density	LOS
AM	4,218	27.3	C
PM	3,873	24.6	C

Ashlan to Shaw — Basic

	Volume	Density	LOS
AM	3,788	21.9	C
PM	3,742	21.6	C

Ashlan to Shaw — Diverge

	Volume	Density	LOS
AM	4,633	32.8	D
PM	4,952	35.1	E

Ashlan to Shaw — Merge

	Volume	Density	LOS
AM	4,633	28.2	D
PM	4,952	29.6	D

Between Ashlan On-Ramps — Merge

	Volume	Density	LOS
AM	4,170	26.9	C
PM	4,551	28.4	D

Ashlan Off-ramp to Ashlan On-ramp — Basic

	Volume	Density	LOS
AM	3,777	21.9	C
PM	4,292	24.9	C

Golden State to Ashlan — Diverge

	Volume	Density	LOS
AM	4,664	33.0	D
PM	5,301	36.1	E

Clinton to Golden State — Diverge

	Volume	Density	LOS
AM	5,500	35.1	E
PM	6,250	38.7	E

Clinton to Golden State — Merge

	Volume	Density	LOS
AM	5,500	34.5	D
PM	6,250	39.0	E

Between Clinton Ramps — Basic

	Volume	Density	LOS
AM	4,527	26.3	D
PM	5,050	30.1	D

McKinley to Clinton — Basic

	Volume	Density	LOS
AM	5,740	24.4	C
PM	6,533	28.4	D

McKinley to Clinton — Basic

	Volume	Density	LOS
AM	5,740	36.8	E
PM	6,533	>45.0	F

South of McKinley — Diverge

	Volume	Density	LOS
AM	6,138	38.5	E
PM	6,988	46.7	F

Figure 5.3-3
Freeway Segment Operations Summary – 2035 No Project Conditions

weaving). The complete analysis is provided in Appendix E. All study freeway segments operate within acceptable LOS (LOS D or better) under 2035 No Project conditions, except eight segments in the northbound direction and six segments in the southbound direction that operate at LOS E or F under AM and/or PM peak hours.

5.3.2.2 Intersection Analysis

Figure 5.3-4 presents the 2035 future No Project AM and PM peak hour volumes at the study intersections. Existing intersection geometry presented in Figure 4.3-7 was used for future year analysis. Based on the existing geometry and future volumes, LOS analysis was performed at the study intersections. Table 5.3-3 provides summary of intersection delay and LOS for the 2035 No Project scenario AM and PM peak hours. Table 5.3-3 also includes data on Intersection Capacity Utilization (ICU). ICU is an additional metric that gives insight into how an intersection is functioning and how much extra capacity is available (values less than 1.0) or if an intersection is over capacity (values greater than 1.0). At the bottom of Table 5.3-3, the average ICU values for the signalized and unsignalized intersections are reported, to give an indication of how the scenarios compare from an intersection capacity standpoint.

In the 2035 No Project condition, many of the study intersections are projected to operate at LOS F due to growth in background traffic. In addition, the numerous unsignalized intersections are projected to deteriorate to LOS F because the peak hour volumes are projected to rise above the operational limits of a stop-controlled intersection. Many of these unsignalized intersections may meet traffic signal warrants based on traffic volume in the future, and the LOS would improve if they were signalized.

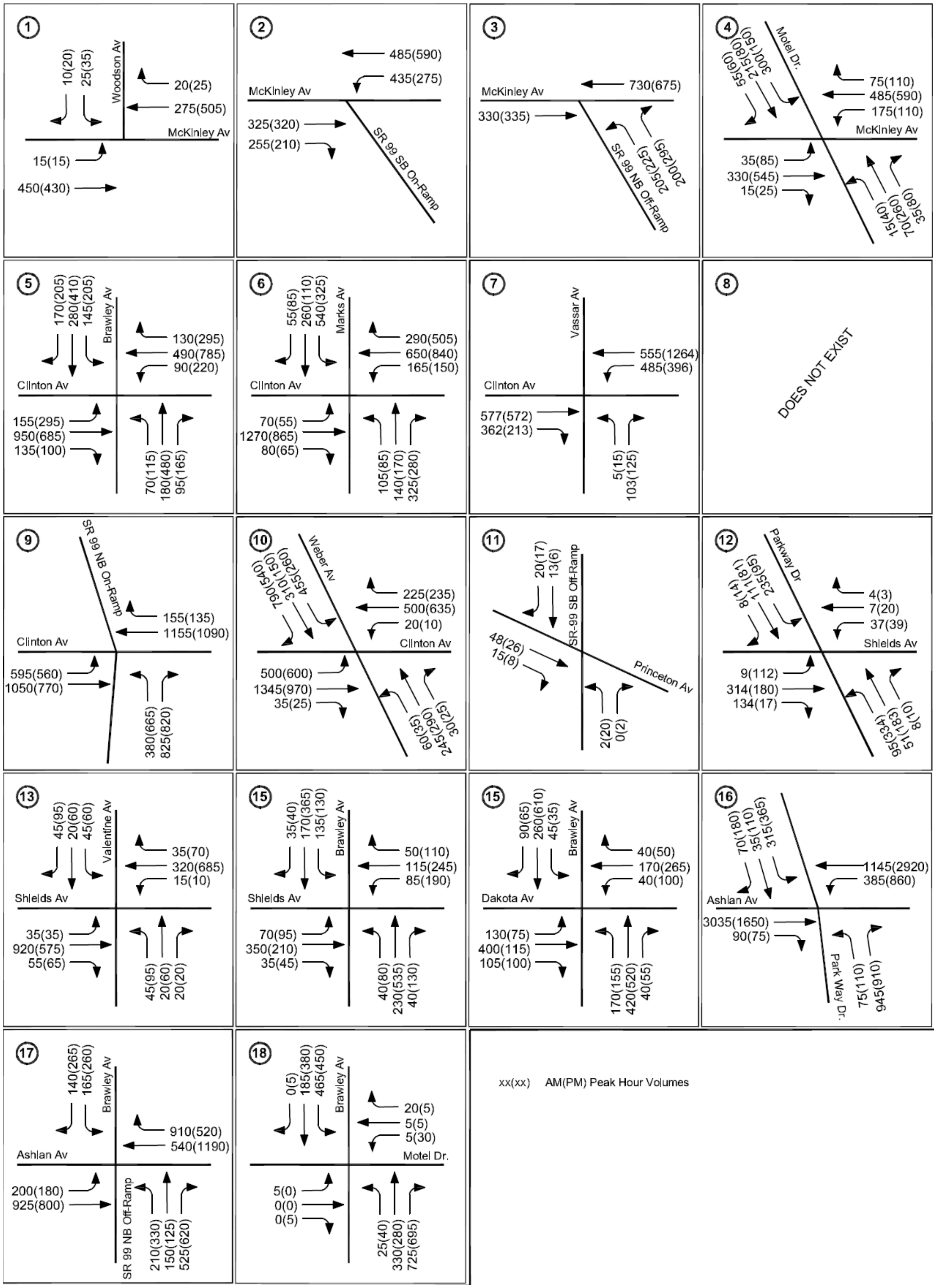


Figure 5.3-4
Future Year (2035) No Project Intersection Volumes – Proposed SR 99 Realignment

Table 5.3-3
Future Year (2035) No Project Intersection Operations Summary

Intersection			AM Peak Hour			PM Peak Hour		
		Control	Delay (sec)	LOS	ICU	Delay (sec)	LOS	ICU
1	McKinley Ave and Woodson Ave	U[a]	15	C	0.48	20	C	0.47
2	McKinley Ave and SR 99 SB On-ramp	U[a]	13	B	0.61	11	B	0.59
3	McKinley Ave and SR 99 NB Off-ramp	U[a]	>50	F	0.61	>50	F	0.59
4	McKinley Ave and Golden State Blvd	S	17	B	0.58	16	B	0.58
5	Clinton Ave and Brawley Ave	S	26	C	0.63	42	D	0.82
6	Clinton Ave and Marks Ave	S	>80	F	1.26	>80	F	1.08
7	Clinton Ave and Vassar Ave	U[a]	>50	F	1.14	>50	F	0.86
8	Clinton Ave and SR 99 SB Ramps	Does Not Exist						
9	Clinton Ave and SR 99 NB Ramps	S	28	C	0.67	23	C	0.65
10	Clinton Ave and Weber Ave	S	>80	F	1.07	>80	F	1.04
11	Princeton Ave and SR 99 SB Ramps/Parkway Dr	U[a]	9	A	0.18	9	A	0.22
12	Shields Ave and SR 99 SB Ramps/Parkway Dr	U	>50	F	0.98	>50	F	0.91
13	Shields Ave and Valentine Ave	U	>50	F	0.95	>50	F	0.88
14	Shields Ave and Brawley Ave	U	23	C	0.66	>50	F	0.88
15	Dakota Ave and Brawley Ave	U	>50	F	1.20	>50	F	1.32
16	Ashlan Ave and SR 99 SB Ramp/Parkway Dr	S	>80	F	1.81	>80	F	1.41
17	Ashlan Ave and SR 99 NB Ramp/Brawley Ave	S	74	E	0.99	75	E	0.89
18	Brawley Ave and Golden State Blvd	U[a]	>50	F	0.78	>50	F	0.80
			Signalized Avg ICU		0.99	Signalized Avg ICU		0.98
			Unsignalized Avg ICU		0.76	Unsignalized Avg ICU		0.75

[a] Two-way stop controlled intersection. Delay reported for worst-case stop-controlled movement.

U = Unsignalized, S = Signalized

5.3.3 Fresno Area between McKinley Avenue and SR 180

Future year (2035) volumes were developed based on the methodology described in Section 5.2. Roadway analysis in this study area was performed based on these volumes. The result of the analysis is presented in Table 5.3-4.

Table 5.3-4
Future Year (2035) No Project Roadway Segment Analysis – Fresno Area Between McKinley Avenue and SR 180

No.	Roadway Segment	ADT	Number of Lanes (N/E or S/W)	LOS
1	Northwest Ave, north of W McKinley Ave	22,618	2/2	D
2	N Weber Ave, north of W McKinley Ave	9,770	1/1	D
3	W McKinley Ave, east of Northwest Ave	15,336	2/2	D
4	Northwest Ave, south of W McKinley Ave	17,530	2/2	D
5	N Weber Ave, north of W Olive Ave	20,344	1/1	F
6	W Olive Ave, west of N Weber Ave	36,662	2/2	F
7	W Olive Ave, east of N Weber Ave	27,004	2/2	D
8	N Weber Ave, south of W Olive Ave	16,320	2/2	D
9	N Golden State Blvd, north of W Belmont Ave	10,840	2/2	C
10	N Weber Ave, north of W Belmont Ave	14,860	2/2	D
11	W Belmont Ave, west of N Golden State Blvd	21,822	2/2	D
12	E Belmont Ave, east of N Weber Ave	27,826	2/2	E
13	N H St, south of E Belmont Ave	9,758	2/2	C

As indicated in Table 5.3-4, all the analysis segments operate at LOS D or better except Weber Avenue north of Olive Avenue, Olive Avenue west of Weber Avenue, and Belmont Avenue east of Weber Avenue, which operate at LOS E or worse under future year (2035) No Project conditions.

5.3.4 Downtown Merced Station

Because no programmed or funded transportation improvements within the study area were identified in the City of Merced General Plan, future year (2035) analysis was performed based on the existing geometry. This section presents the analysis of future 2035 No Project roadway and intersection operating conditions in the vicinity of the proposed Merced station.

5.3.4.1 Roadway Analysis

Future year (2035) No Project volumes were developed based on the methodology described in Section 5.2. Existing roadway lane geometry was used for future year analysis conditions because no programmed or funded transportation improvements within the study area were identified in the City of Merced General Plan.

Based on the existing geometry and future year (2035) No Project volumes, roadway analysis was performed for the AM and PM peak hours. The result of the roadway segment analysis is presented in Table 5.3-5. LOS calculation sheets are presented in Appendix C.

It can be noted from Table 5.3-5 that roadways segments on Main Street (between Martin Luther King Jr. Way and SR 140), 16th Street (between G Street and SR 140), 15th Street (between R and G Streets), Martin Luther King Jr. Way (Between Childs Avenue and 16th Street), and G Street (between 13th and 16th Streets) operate at LOS D or better under both AM and PM peak hours. All the other analysis segments operate at LOS E/F under AM and/or PM peak hours.

Table 5.3-5
Future Year (2035) No Project Roadway Segment Analysis – Downtown Merced Station

Segment	Travel Lanes	AM Peak Hour			PM Peak Hour		
		Vols	V/C	LOS	Vols	V/C	LOS
Main Street							
- Between Martin Luther King Jr. Way and M St	2	414	0.41	A	826	0.81	C
- Between G St and Martin Luther King Jr. Way	4	339	0.15	A	574	0.26	A
- Between Yosemite Pkwy (SR 140) and G St	2	490	0.48	A	507	0.50	A
16th Street							
- Between V St and SR 59	4	2,335	1.06	F	3,344	1.51	F
- Between R St and M St	4	1,402	0.63	B	2,341	1.06	F
- Between Martin Luther King Jr. Way and M St	4	1,465	0.66	B	2,288	1.04	F
- Between G St and Martin Luther King Jr. Way	4	1,458	0.66	B	2,079	0.94	E
- Between Yosemite Pkwy (SR 140) and G St	4	1,155	0.52	A	1,670	0.76	C
15th Street							
- Between R St and M St	2	213	0.21	A	554	0.54	A
- Between Martin Luther King Jr. Way and M St	2	175	0.17	A	510	0.50	A
- Between G St and Martin Luther King Jr. Way	2	280	0.27	A	538	0.53	A
V Street							
- West of 13th St	2	1,294	1.27	F	1,622	1.59	F
- Between 13th St and 16th St	4	2,319	1.05	F	2,950	1.33	F
- East of 16th St	2	1,209	1.18	F	1,430	1.40	F
R Street							
- West of 13th St	2	1,435	1.41	F	1,895	1.86	F
- Between 13th St and 16th St	4	1,865	0.84	D	2,694	1.22	F
- East of 16th St	4	1,961	0.89	D	3,042	1.38	F
M Street							
- West of 13th St	2	1,038	1.02	F	1,212	1.19	F

Segment	Travel Lanes	AM Peak Hour			PM Peak Hour		
		Vols	V/C	LOS	Vols	V/C	LOS
- Between 13th St and 16th St	2	1,229	1.20	F	1,348	1.32	F
- East of 16th St	4	2,164	0.98	E	2,465	1.12	F
Martin Luther King Jr. Way							
- West of Childs Ave	4	1,671	0.76	C	2,027	0.92	E
- Between Childs Ave and 13th St	4	1,383	0.63	B	1,984	0.90	D
- Between 13th St and 16th St	4	1,510	0.68	B	1,958	0.89	D
- East of 16th St	2	523	0.51	A	816	0.80	C
G Street							
- West of 13th St	2	1,048	1.03	F	1,106	1.08	F
- Between 13th St and 16th St	4	1,691	0.77	C	1,966	0.89	D
- East of 16th St	4	2,638	1.19	F	2,967	1.34	F

5.3.4.2 Intersection Analysis

Future year (2035) No Project volumes were developed based on the methodology described in Section 5.2. The future year (2035) No Project condition volumes for the AM and PM peak hours are presented in Figures 5.3-5(a), 5.3-5(b), and 5.3-5(c). Existing intersection geometry was used for future year analysis conditions because no programmed or funded transportation improvements within the study area were identified in the City of Merced General Plan.

Based on the existing geometry and future year (2035) No Project volumes, intersection analysis was performed for the AM and PM peak hours. The result of the intersection analysis is presented in Table 5.3-6. LOS calculation sheets are presented in Appendix C.

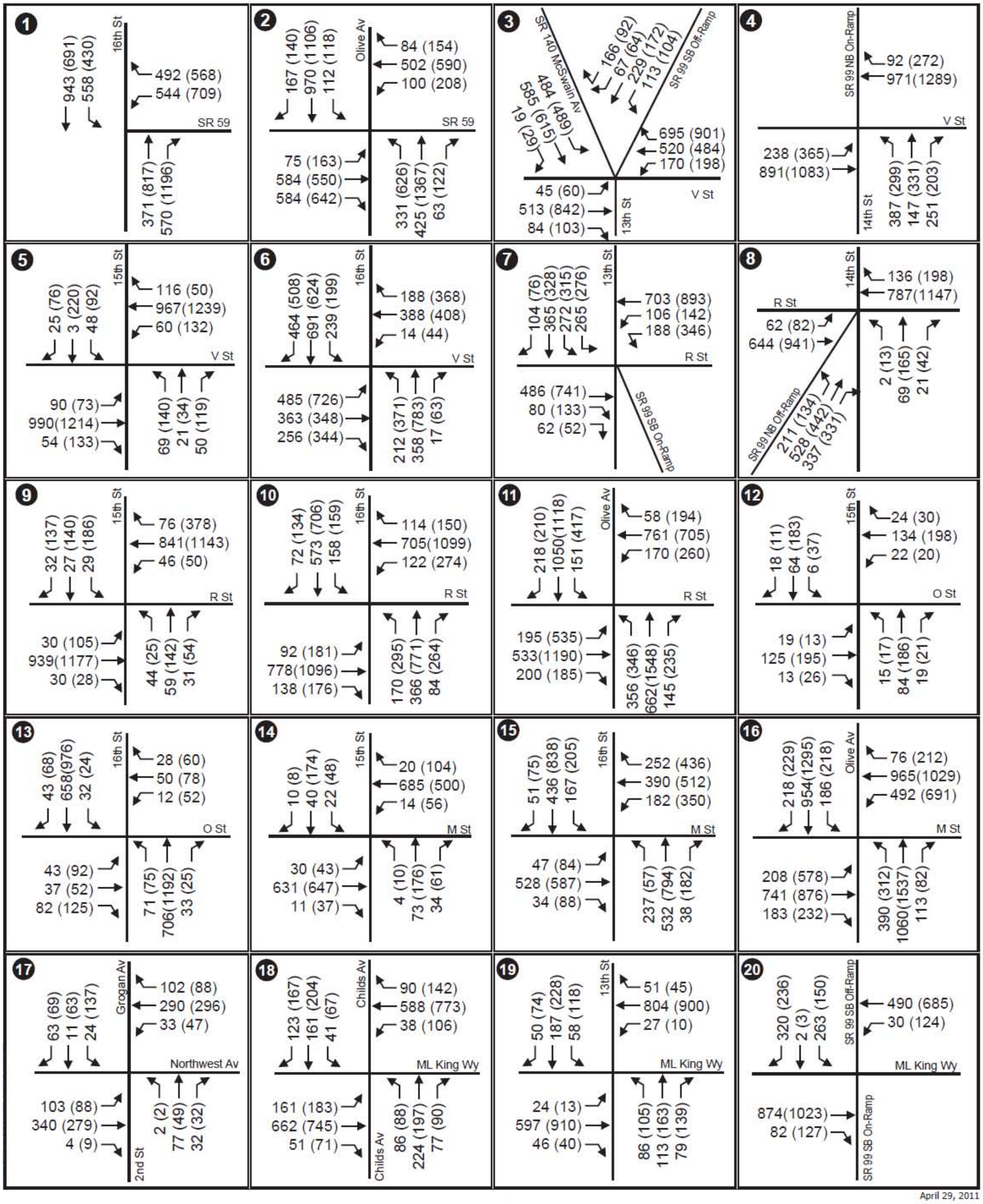
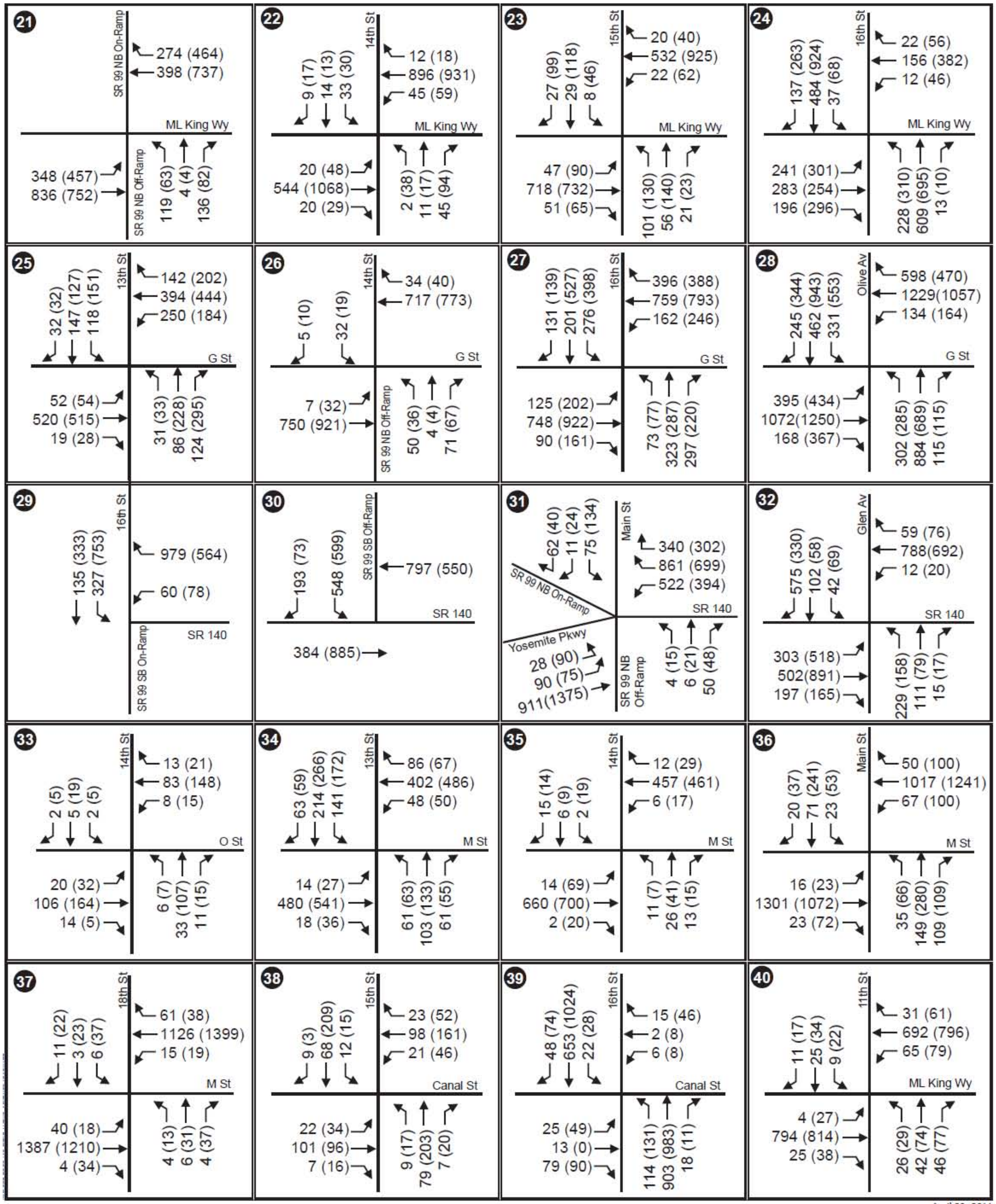
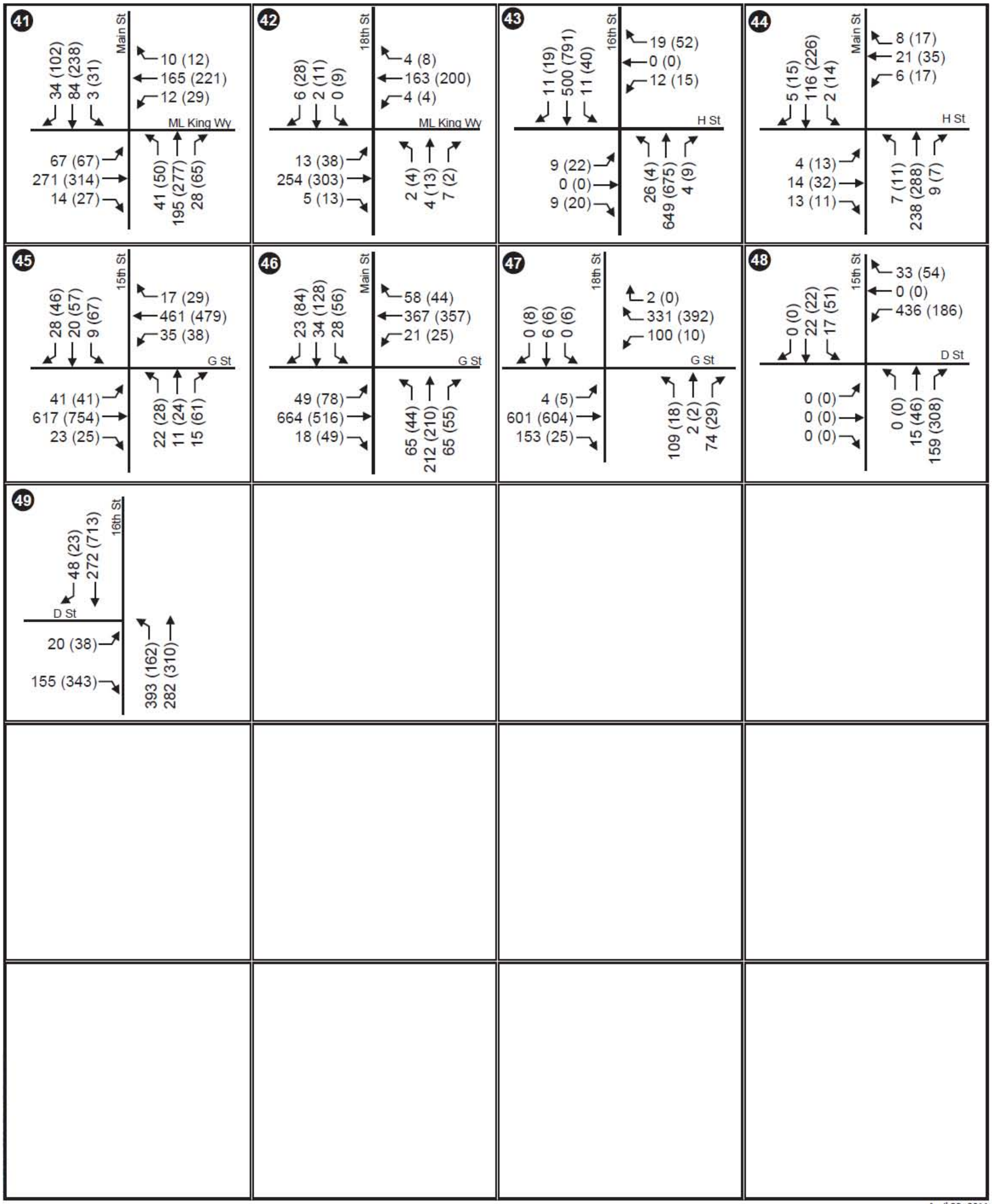


Figure 5.3-5(a)
Future Year (2035) No Project Intersection Volumes – Merced Station



xx (xx) AM (PM) Peak Hour Volumes

Figure 5.3-5(b)
Future Year (2035) No Project Intersection Volumes – Merced Station



xx (xx) AM (PM) Peak Hour Volumes

Figure 5.3-5(c)
Future Year (2035) No Project Intersection Volumes – Merced Station

Table 5.3-6
Future Year (2035) No Project Intersection
Operating Conditions – Downtown Merced Station

			2035 No Project			
			AM Peak Hour		PM Peak Hour	
Intersection		Control	LOS	Del (sec)	LOS	Del (sec)
1	16th St/SR 59[a]	Unsignalized	F	>50	F	>50
2	Olive Ave - Santa Fe Dr/SR 59	Signalized	E	56.2	F	>80
3	13th St - SR 99 SB Off-ramp/V St	Signalized	F	>80	F	>80
4	14th St - SR 99 NB On-ramp/V St	Signalized	C	23.3	C	30.7
5	15th St/V St	Signalized	B	17.2	C	28.7
6	16th St/V St	Signalized	E	57.6	F	>80
7	13th St/R St	Signalized	B	17.4	C	33.0
8	SR 99 NB Off-ramp - 14th St/R St	Signalized	C	23.1	C	24.3
9	15th St/R St	Signalized	B	16.4	C	26.5
10	16th St/R St	Signalized	C	33.9	D	46.7
11	Olive Ave/R St	Signalized	E	59.5	F	>80
12	15th St/O St[b]	Unsignalized	A	8.6	B	11.5
13	16th St/O St	Signalized	C	21.0	C	22.1
14	15th St/M St[b]	Unsignalized	F	>50	F	>50
15	16th St/M St	Signalized	D	36.0	D	43.8
16	Olive Ave/M St	Signalized	F	>80	F	>80
17	2nd St/Grogan Avenue/Northwest Avenue[b]	Unsignalized	C	16.6	C	16.9
18	Childs Ave/Martin Luther King Jr. Way	Signalized	E	56.7	F	>80
19	13th St/Martin Luther King Jr. Way	Signalized	C	26.8	C	32.7
20	SR 99 SB Ramps/Martin Luther King Jr. Way[a]	Unsignalized[a]	F	>50	F	>50
21	SR 99 NB Ramps/Martin Luther King Jr. Way[a]	Unsignalized	F	>50	F	>50
22	14[th] St/Martin Luther King Jr. Way[a]	Unsignalized	F	>50	F	>50
23	15th St/Martin Luther King Jr. Way	Signalized	B	13.9	B	17.6
24	16th St/Martin Luther King Jr. Way	Signalized	C	33.3	F	>80
25	13th St/G St[b]	Unsignalized	F	>50	F	>50
26	SR 99 - 14th St/G St[a]	Unsignalized	E	39.6	F	>50

Intersection		Control	2035 No Project			
			AM Peak Hour		PM Peak Hour	
			LOS	Del (sec)	LOS	Del (sec)
27	16th St/G St	Signalized	D	39.7	D	51.6
28	Olive Ave/G St	Signalized	F	>80	F	>80
29	SR 99 SB On-ramp/SR 140[a]	Unsignalized	C	19.6	F	>50
30	SR 99 SB Off-ramp/SR 140[a]	Unsignalized	F	>50	F	>50
31	SR 99 NB Off-ramp/Yosemite Parkway[a]	Unsignalized[a]	F	>50	F	>50
32	Motel Drive/Glen Avenue/Yosemite Parkway (SR 140)	Signalized	F	>80	F	>80
33	14th St / O St[a]	Unsignalized	B	10.6	B	14.0
34	13th St / M St[b]	Unsignalized	F	>50	F	>50
35	14th St / M St[a]	Unsignalized	D	26.8	E	42.6
36	Main St / M St	Signalized	B	11.8	B	18.7
37	18th St / M St	Signalized	B	13.0	B	14.4
38	15th St / Canal St[a]	Unsignalized	B	12.1	C	21.0
39	16th St / Canal St[a]	Unsignalized	F	>50	F	>50
40	11th St / Martin Luther King Jr. Way[a]	Unsignalized	F	>50	F	Overflow
41	Main St / Martin Luther King Jr. Way	Signalized	A	9.9	B	10.9
42	18th St / Martin Luther King Jr. Way[b]	Unsignalized	A	8.6	A	9.6
43	16th St / H St[a]	Unsignalized	C	16.2	D	28.3
44	Main St / H St[a]	Unsignalized	B	11.2	B	13.6
45	15th St / G St[a]	Unsignalized	D	27.2	F	>50
46	Main St / G St	Signalized	B	18.3	C	21.2
47	18th St / G St	Signalized	A	9.2	A	4.5
48	15th St / D St[a]	Unsignalized	D	32.4	C	17.5
49	16th St / D St[a]	Unsignalized	E	39.4	E	39.3

[a] One-way or two-way stop controlled intersection. LOS and delay reported for the worst movement.
[b] All-way stop controlled intersection, average delay reported

As noted from the table above, 25 of 49 intersections would operate at LOS E or F conditions in 2035, 21 during the AM and PM peak hours and four during the PM peak hour only.

5.3.5 Downtown Fresno Station

This section presents the analysis of future 2035 No Project roadway and intersection operating conditions in the vicinity of the proposed Fresno station.

5.3.5.1 Roadway Analysis

Table 5.3-7 summarizes the roadway segment analysis. It can be noted from the table that 9 of 41 roadway segments are projected to operate with LOS E or F under future no project conditions.

Table 5.3-7
Future Year (2035) No Project Roadway Segment Analysis – Downtown Fresno Station

No.	Roadway Segment	ADT	Number of Lanes (N/E or S/W)	Divided/ Undivided	LOS
1	Fulton St, between CA 180 EB Ramps and E Divisadero St	8,230	0/2	One-Way	D
2	Van Ness Ave, between CA 180 EB Ramps and E Divisadero St	13,670	2/0	One-Way	D
3	E Divisadero St, between H St and Broadway St	32,610	2/2	Undivided	F
4	H St, between E Divisadero St and Stanislaus St	16,150	1/1	Undivided	F
5	Broadway St, between San Joaquin St and Stanislaus St	12,730	1/2	Undivided	D
6	Van Ness Ave, between Stanislaus St and E Divisadero St	8,280	1/1	Divided/Undivided	D
7	Stanislaus St, between Van Ness Ave and O St	17,440	0/3	One-Way	D
8	N Blackstone Ave, between Mckenzie Ave and E Belmont Ave	21,360	0/3	One-Way	D
9	N Abby St, between Mckenzie Ave and E Belmont Ave	16,980	3/0	One-Way	D
10	E Belmont Ave, between N Fresno St and N Abby St	34,810	2/2	Divided	F
11	Stanislaus St, between Broadway St and E St	24,100	0/2	One-Way	F
12	Tuolumne St, between Broadway St and E St	13,060	2/0	One-Way	D
13	Tuolumne St, between Van Ness Ave and O St	8,530	3/0	One-Way	C
14	Fresno St, between P St and M St	29,000	2/2	Divided	D
15	Fresno St, between M St and Van Ness Ave	22,500	2/2	Divided	D
16	Fresno St, between Van Ness Ave and Broadway St	25,700	2/2	Divided	D
17	Fresno St, between G St and SR 99 NB Ramps	27,890	2/2	Divided	D
18	Fresno St, between C St and B St	34,380	2/2	Divided	F
19	Van Ness Ave, between Fresno St and	14,970	2/1	Undivided	D

No.	Roadway Segment	ADT	Number of Lanes (N/E or S/W)	Divided/ Undivided	LOS
	Tulare St				
20	Tulare St, between Broadway St and Van Ness Ave	30,210	2/2	Divided	D
21	Tulare St, between R St and U St	22,310	2/2	Undivided	D
22	Divisadero St, between N Fresno St and SR 41 Ramps	27,160	2/2	Divided/Undivided	D
23	Tulare St, between SR 41 Ramps and N First St	34,630	2/2	Divided/Undivided	F
24	M St, between Tulare St and Inyo St	17,230	0/3	One-Way	D
25	Inyo St, between Broadway St and Van Ness Ave	9,790	1/1	Undivided	D
26	Van Ness Ave, between Inyo St and Ventura Ave	13,120	2/2	Undivided	D
27	P St, between Inyo St and Ventura Ave	8,800	3/0	One-Way	C
28	Ventura Ave, between B St and C St	30,390	2/2	Divided	E
29	Ventura Ave, between E St and G St	24,450	2/2	Divided	D
30	Broadway St, between Ventura Ave and SR 41 Ramps	19,480	1/2	Undivided	D
31	Van Ness Ave, between Ventura Ave and SR 41 Ramps	19,420	2/1	Undivided	D
32	Ventura Ave, between M St and Van Ness Ave	21,310	2/2	Divided	D
33	Ventura Ave, between P St and N First St	35,260	3/3	Undivided	D
34	N Blackstone Ave, between SR 180 EB Ramps and E Belmont Ave	26,250	0/3	One-Way	F
35	N Abby St, between SR 180 EB Ramps and E Belmont Ave	23,480	3/0	One-Way	E
36	Divisadero St between G St and H St	19,777	2/1	Undivided	D
37	Kern St between G St and H St	2,278	1/1	Undivided	C
38	Mono St between G St and H St	820	1/1	Undivided	C
39	S Railroad Ave between E Florence Ave and E Church Ave	3,084	1/1	Undivided	C
40	S Railroad Ave between E Church Ave and E Jensen Ave	2,339	1/1	Undivided	C
41	S Orange Ave between S Railroad Ave and Golden State Blvd	2,308	1/1	Undivided	C

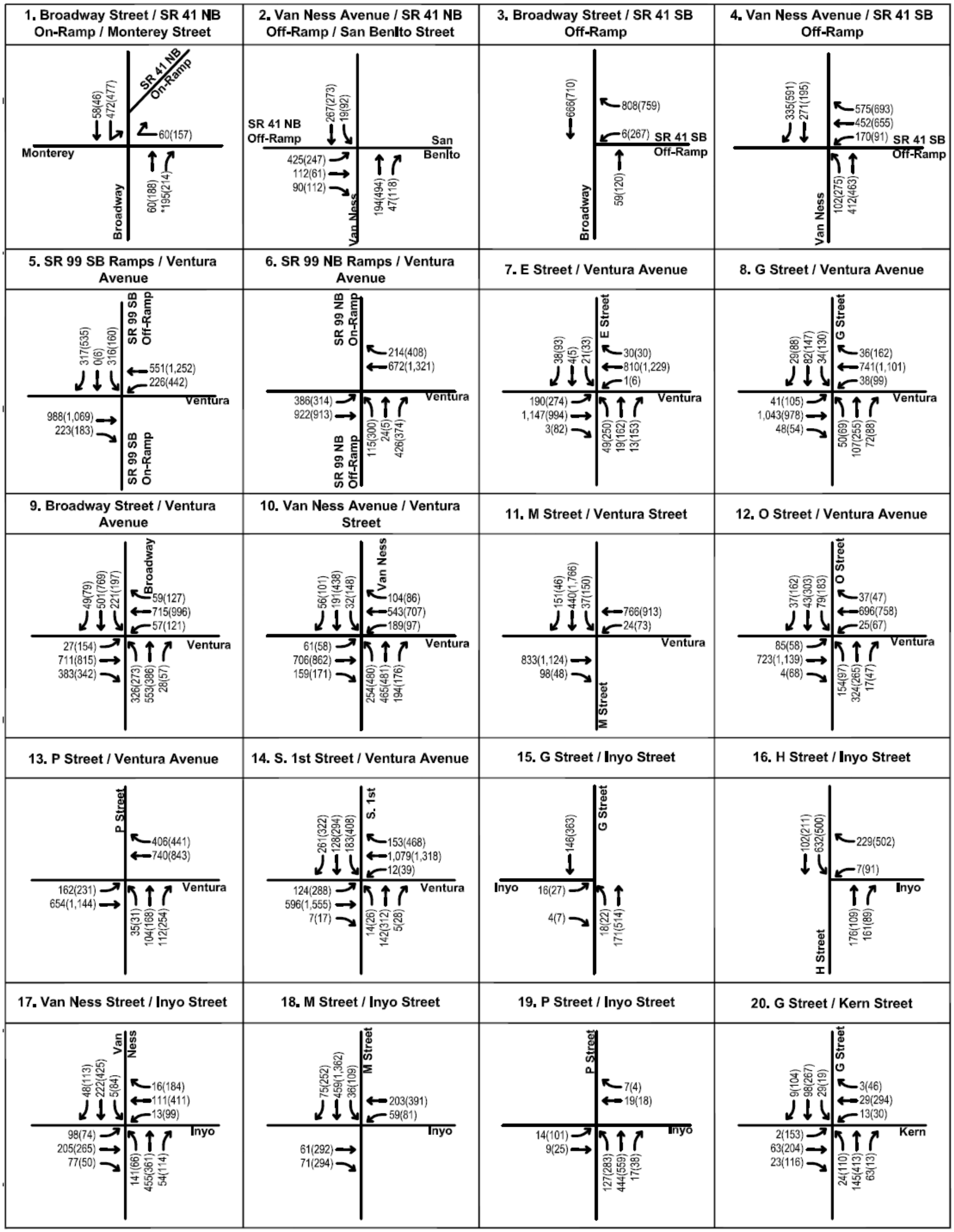
Notes: LOS based on Florida Tables

Acronyms and Abbreviations:

ADT	average daily traffic
AM	morning
CA	California
E	east
LOS	level of service
N	north
PM	afternoon
SR	State Route

5.3.5.2 Intersection Analysis

Future No Project traffic demands were projected based on the Fresno County Travel Demand Regional Model. Peak hour turning movement volumes at the study intersections were projected by application of Furness procedure using TurnsW32 software from Dowling Associates. Figures 5.3-6(a) through 5.3-6(f) illustrate the projected peak hour turning movements at the study intersections.



Note:
*XX(XX) Volume going to SR 41 NB On-Ramp

Figure 5.3-6 (a)
Future Year (2035) No Project Volumes – Downtown Fresno Station

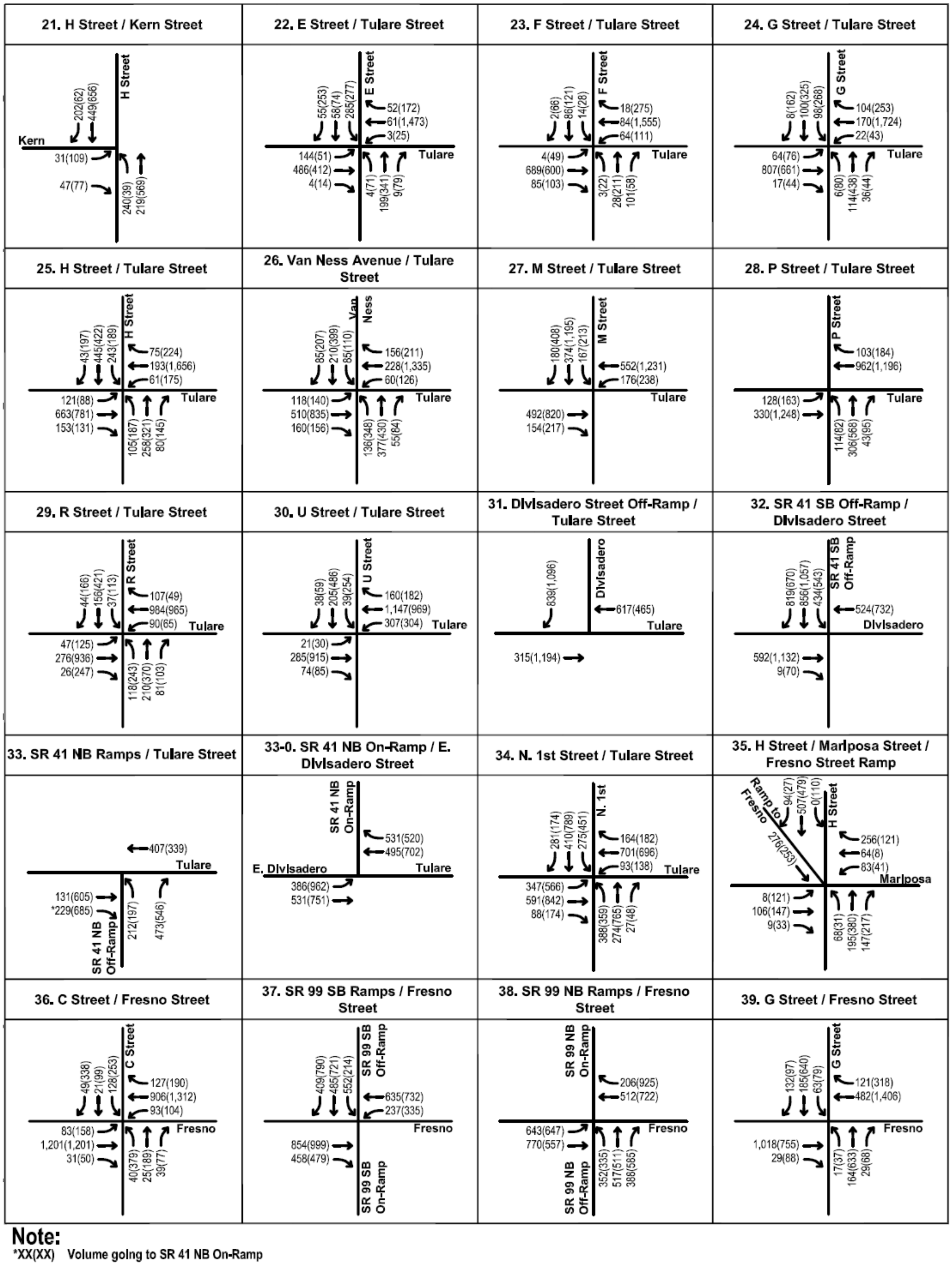


Figure 5.3-6(b)
Future Year (2035) No Project Volumes – Downtown Fresno Station

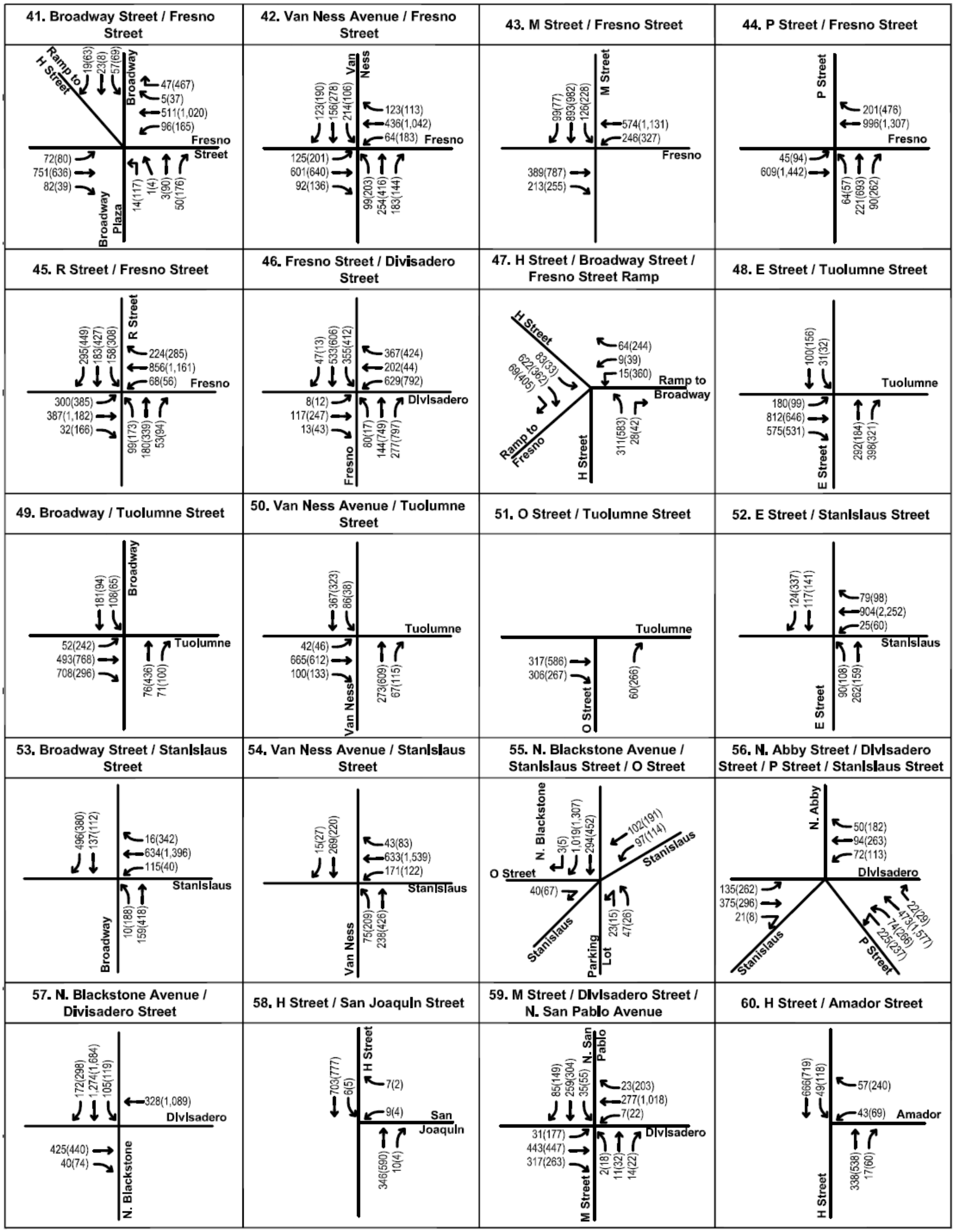
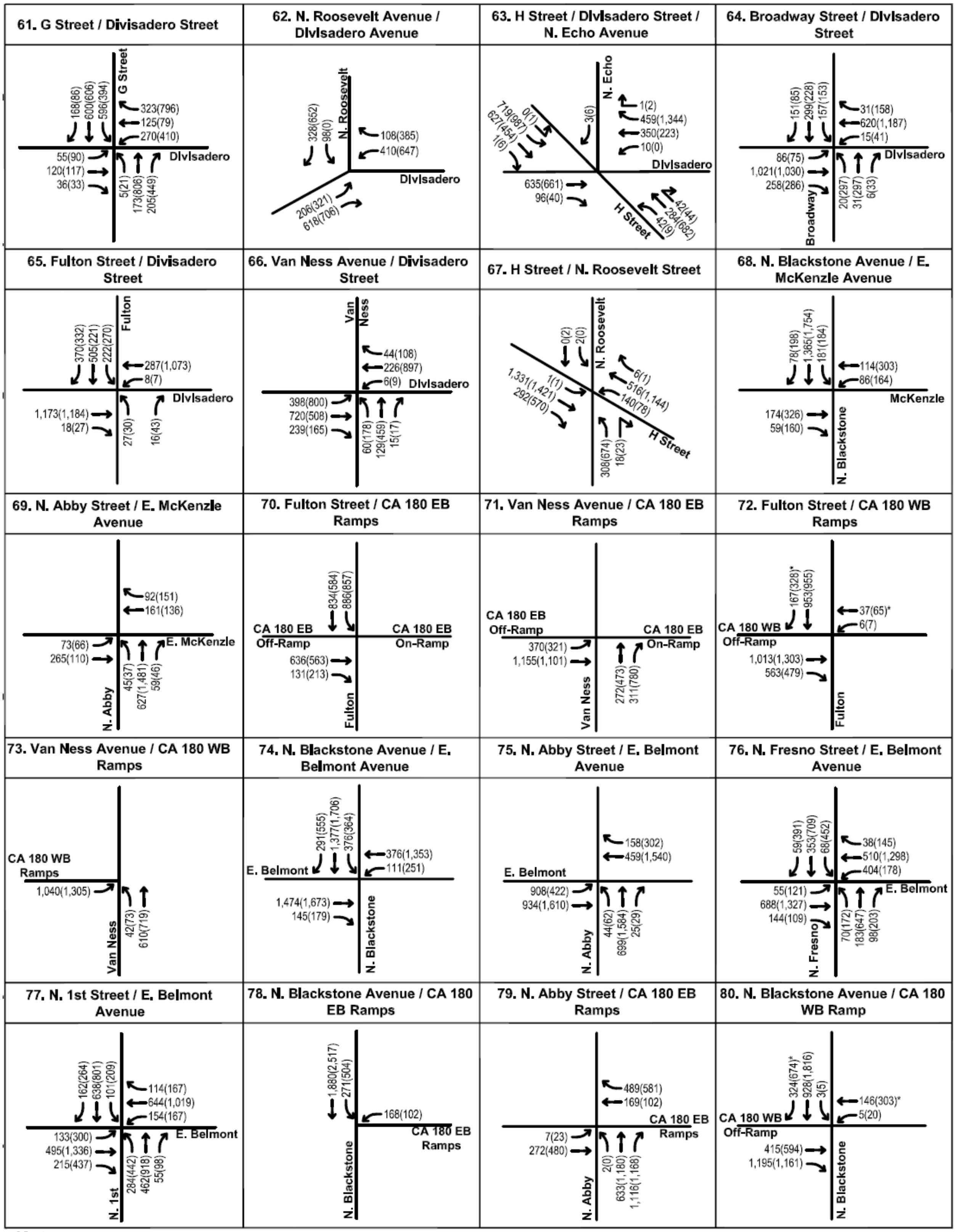


Figure 5.3-6(c)
Future Year (2035) No Project Volumes – Downtown Fresno Station



Note:
*XX(XX) Volume going to CA 180 WB On-Ramp

Figure 5.3-6(d)
Future Year (2035) No Project Volumes – Downtown Fresno Station

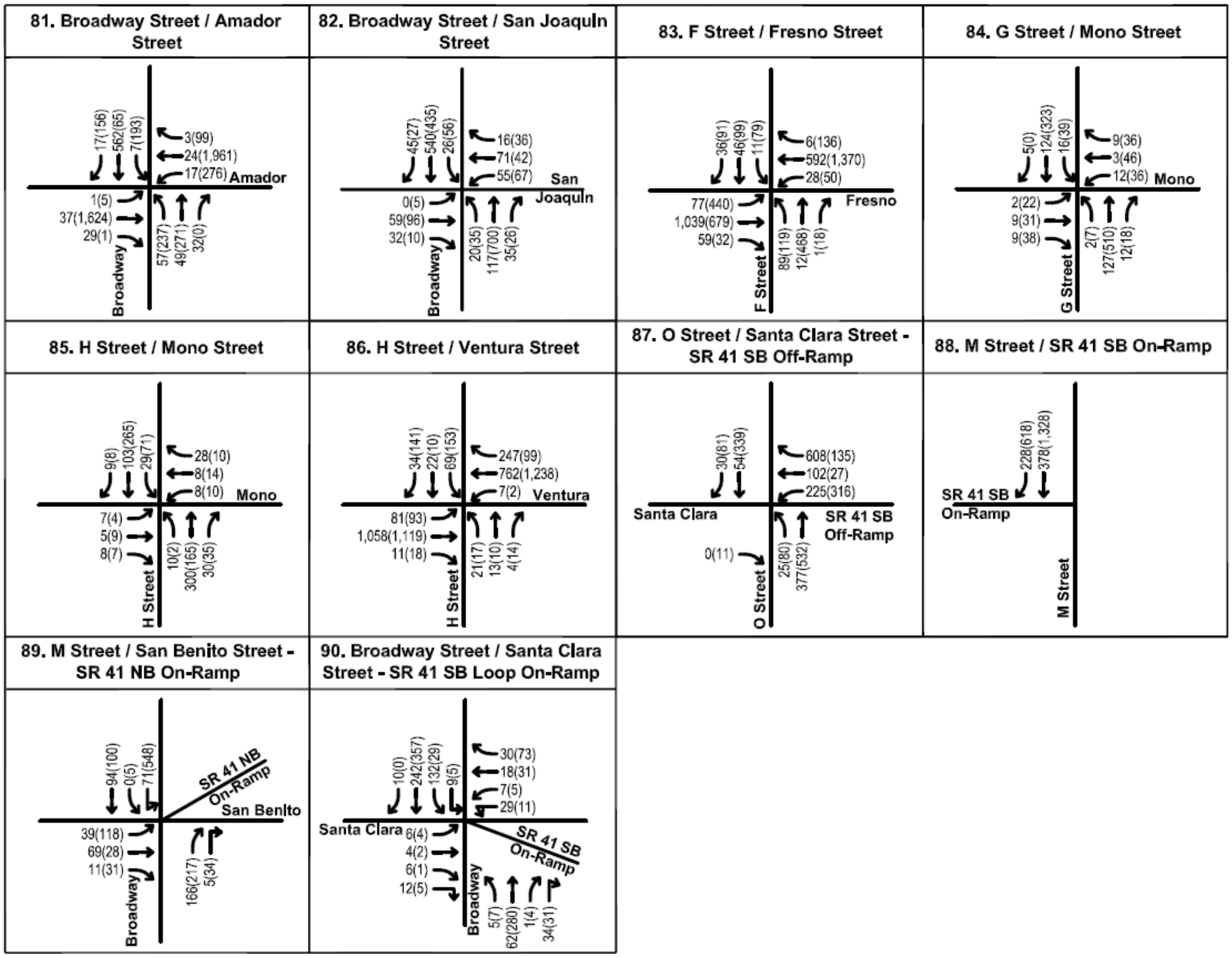


Figure 5.3-6(e)
Future Year (2035) No Project Volumes – Downtown Fresno Station

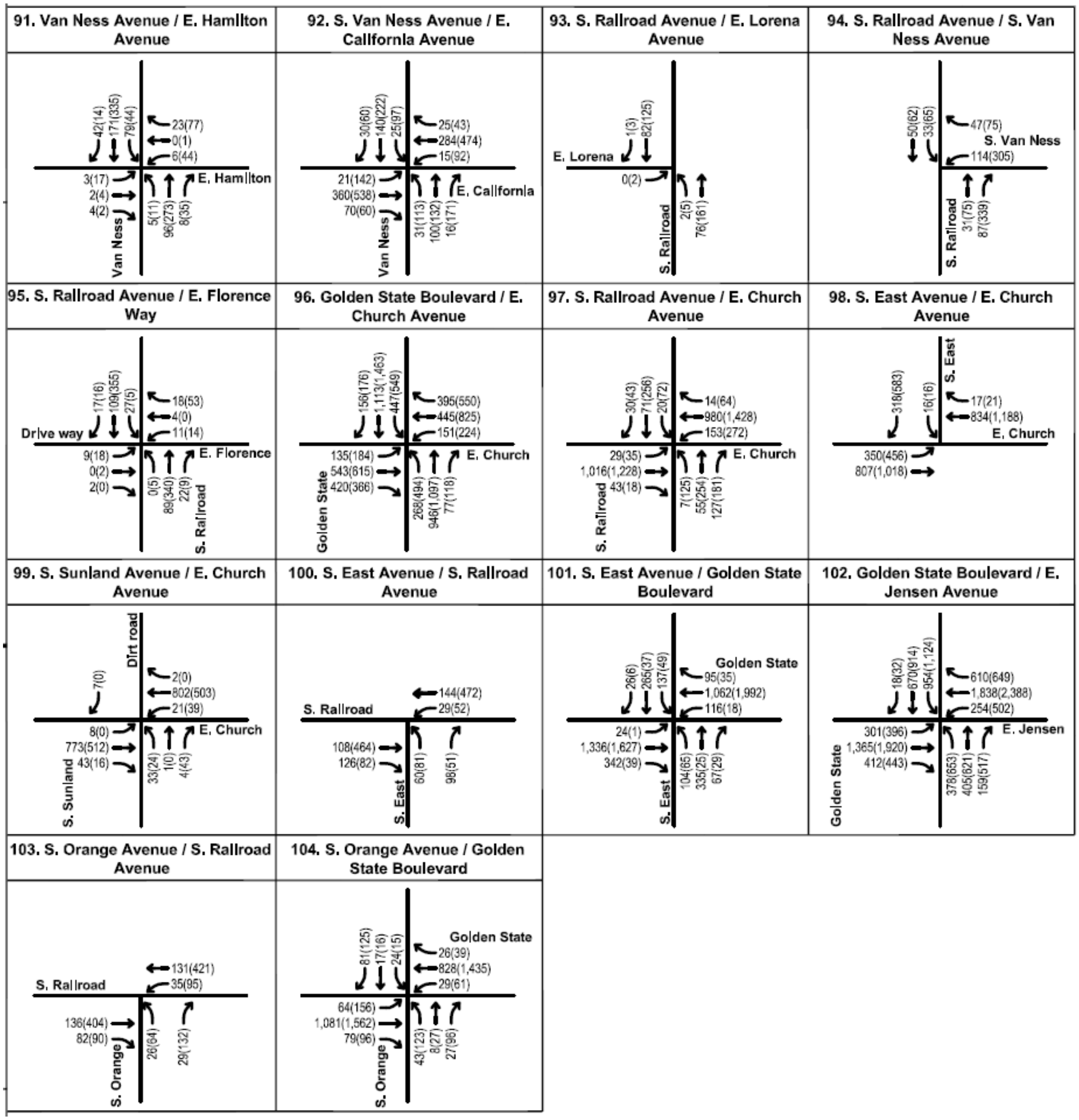


Figure 5.3-6(f)
Future Year (2035) No Project Volumes – Downtown Fresno Station

Table 5.3-8 summarizes the intersection analysis performed for the AM and PM peak hours. LOS calculation sheets are presented in Appendix C. It can be noted from the table that 54 intersections operate at LOS E or F conditions under AM and/or PM peak hours under future No Project conditions.

Table 5.3-8
Future Year (2035) No Project Intersection
Operating Conditions – Downtown Fresno Station

Intersection		Control	2035 No Project			
			AM Peak Hour		PM Peak Hour	
			LOS	Delay (sec)	LOS	Delay (sec)
1	Broadway St/SR 41 NB Ramp/Monterey St	TWSC	B	10.2	B	13.0
2	Van Ness Ave/SR 41 NB Ramp	AWSC	E	45.8	C	19.3
3	Broadway St/SR 41 SB Ramp	OWSC	D	27.7	E	43.5
4	Van Ness Ave/SR 41 SB Ramp	OWSC	F	>50	F	>50
5	SR 99 SB Ramps/Ventura Ave	S	C	29.3	F	>80
6	SR 99 NB Ramps/Ventura Ave	OWS	F	>50	F	[a]
7	E St/Ventura Ave	TWSC	F	[a]	F	[a]
8	G St/Ventura Ave	S	A	8.5	B	14.6
9	Broadway St/Ventura Ave	S	E	75.7	F	>80
10	Van Ness Ave/Ventura St	S	C	22.2	F	>80
11	M St/Ventura Ave	S	B	10.8	C	21.1
12	O St/Ventura Ave	S	C	24.7	E	60.5
13	P St/Ventura Ave	S	A	4.7	A	8.8
14	N 1st St/Ventura Ave	S	B	15.2	D	45.7
15	G St/Inyo St	OWSC	B	10.7	C	18.9
16	H St/ Inyo St	S	B	19.0	B	15.5
17	Van Ness Ave/Inyo St	S	B	10.4	B	15.3
18	M St/Inyo St	S	A	9.5	B	19.7
19	P St/Inyo St	TWSC	C	16.0	F	>50
20	G St/Kern St	S	A	5.0	B	13.3
21	H St/Kern St	OWSC	D	25.9	E	35.8
22	E St/Tulare St	S	C	21.7	F	>80
23	F St/Tulare St	S	B	10.7	F	>80
24	G St/Tulare St	S	C	27.1	F	>80
25	H St/Tulare St	S	B	12.0	D	45.7
26	Van Ness Ave/Tulare St	S	C	25.4	F	>80
27	M St/Tulare St	S	B	10.6	C	33.0
28	P St/Tulare St	S	B	10.3	C	29.7
29	R St/Tulare St	S	B	11.1	C	23.6
30	U St/Tulare St	S	A	8.7	E	79.8

Intersection		Control	2035 No Project			
			AM Peak Hour		PM Peak Hour	
			LOS	Delay (sec)	LOS	Delay (sec)
31	Divisadero St Off-ramp/Tulare St	S	A	7.0	B	11.6
32	SR 41 SB Ramp/Divisadero St	S	B	15.4	C	23.0
33	SR 41 NB Ramps/Tulare St	S	A	9.7	B	17.4
33-0	Divisadero St/SR 41 NB Ramps/Tulare St	S	C	24.6	D	40.8
34	N 1st St/Tulare St	S	D	46.5	E	59.5
35	H St/Mariposa St/Fresno Ramps	S	B	11.3	B	10.8
36	C St/Fresno St	S	B	11.5	F	>80
37	SR 99 SB Ramps/Fresno St	S	E	56.4	F	>80
38	SR 99 NB Ramps/Fresno St	S	D	43.6	F	>80
39	G St/Fresno St	S	A	8.0	B	15.8
40	H St/Fresno St	Intersection not used				
41	Broadway St/Fresno St	S	A	4.8	B	12.7
42	Van Ness Ave/Fresno St	S	C	29.1	E	70.1
43	M St/Fresno St	S	B	13.1	D	44.5
44	P St/Fresno St	S	B	11.7	B	18.9
45	Fresno St/R St	S	C	23.8	F	>80
46	Fresno St/Divisadero St	S	C	28.7	F	>80
47	H St/Broadway St	S	A	6.3	B	12.7
48	E St/Tuolumne St	S	B	12.9	B	11.3
49	Broadway St/Tuolumne St	S	B	12.7	B	19.8
50	Van Ness Ave/Tuolumne St	S	B	11.7	B	16.7
51	O St/Tuolumne St	S	A	3.5	A	6.6
52	E St/Stanislaus St	S	A	7.8	B	14.2
53	Broadway St/Stanislaus St	S	B	12.1	B	16.7
54	Van Ness Ave/Stanislaus St	S	B	12.6	C	23.9
55	N Blackstone Ave/Stanislaus St	S	C	28.2	D	41.1
56	N Abby St/E Divisadero St	S	B	11.5	C	29.1
57	N Blackstone Ave/Divisadero St	S	B	18.7	C	31.3
58	H St/San Joaquin St	OWSC	C	17.5	D	26.3
59	M St/Divisadero St	S	B	11.1	B	16.4
60	H St/Amador St	OWSC	C	21.5	F	>50
61	G St/Divisadero St	S	C	23.1	F	>80
62	N Roosevelt Ave/E Divisadero Ave	OWSC	F	>50	F	[a]
63	H St/Divisadero St	S	F	>80	F	>80
64	Broadway St/Divisadero St	S	B	16.7	E	57.3
65	Fulton St/Divisadero St	S	B	15.2	B	16.4

Intersection		Control	2035 No Project			
			AM Peak Hour		PM Peak Hour	
			LOS	Delay (sec)	LOS	Delay (sec)
66	Van Ness Ave/Divisadero St	S	C	24.0	F	>80
67	H St/Roosevelt St	S	B	19.3	F	>80
68	N Blackstone Ave/E Mckenzie Ave	S	B	10.5	F	>80
69	N Abby St/E Mckenzie Ave	S	B	10.3	B	10.5
70	Fulton St/SR 180 EB Ramps	S	C	30.5	C	22.7
71	Van Ness Ave/SR 180 EB Ramps	S	C	33.4	F	>80
72	Fulton St/180 WB Ramps	S	D	48.4	F	>80
73	Van Ness Ave/SR 180 WB Ramps	S	D	39.3	F	>80
74	N Blackstone Ave/E Belmont Ave	S	F	>80	F	>80
75	N Abby St/E Belmont St	S	D	46.5	F	>80
76	Fresno St/E Belmont St	S	D	46.2	F	>80
77	N 1st St/E Belmont St	S	D	43.6	F	>80
78	N Blackstone Ave/SR 180 EB Ramps	S	A	8.9	A	9.8
79	N Abby St/SR 180 EB Ramps	S	D	43.4	F	>80
80	N Blackstone Ave/SR 180 WB Ramps	S	F	>80	F	>80
81	Broadway St/Amador St	TWSC	C	18.6	F	[a]
82	Broadway St/San Joaquin St	TWSC	D	28.9	F	[a]
83	F St/Fresno St	S	A	6.0	F	87.7
84	G St/Mono St	TWSC	B	10.5	E	38.2
85	H St/Mono St	TWSC	B	12.2	B	14.2
86	H St/Ventura St	TWSC	E	46.0	F	[a]
87	O St/Santa Clara St - SR 41 SB Off-ramp	AWSC	C	15.0	F	69.3
88	M St/SR 41 SB On-ramp	Intersection not used				
89	M St/San Benito - SR 41 NB On-ramp	TWSC	C	17.7	F	[a]
90	Broadway St/Santa Clara St	TWSC	B	14.8	C	16.9
91	Van Ness Ave/E Hamilton Ave	AWSC	A	9.3	B	12.8
92	S Van Ness Ave/E California Ave	TWSC	F	63.1	F	[a]
93	S Railroad Ave/E Lorena Ave	OWSC	A	0.2	B	10.4
94	S Van Ness Ave/S Railroad Ave	OWSC	B	10.6	D	28.6
95	S Railroad Ave/E Florence Ave	TWSC	B	10.6	C	20.1
96	Golden State Blvd/E Church Ave	S	D	41.8	F	185.5
97	S Railroad Ave/E Church Ave	S	A	6.1	D	35.8
98	S East Ave/E Church Ave	OWSC	F	260	F	[a]
99	S Sunland Ave/E Church Ave	TWSC	F	56.8	C	16.3
100	S East Ave/S Railroad Ave	OWSC	B	11.5	E	36.7

Intersection		Control	2035 No Project			
			AM Peak Hour		PM Peak Hour	
			LOS	Delay (sec)	LOS	Delay (sec)
101	S East Ave/Golden State Blvd	S	D	38.8	B	19.4
102	Golden State Blvd/E Jensen Ave	S	F	160.5	F	358.2
103	S Railroad Ave/S Orange Ave	OWSC	B	10.7	D	29.4
104	S Golden State Blvd/S Orange Ave	TWSC	F	66.4	F	[a]

Notes:

[a] Volumes at the intersection exceed theoretical capacity. As a result, average delay cannot be predicted.
Delay time is reported in seconds.

Source: Fresno – Bakersfield Transportation Technical Report, Authority 2011.

5.3.6 Castle Commerce Center Heavy Maintenance Facility

Future roadway improvements in the vicinity of the Castle Commerce Center HMF include the following:

- AME, connecting Gurr Road in the south to Bellevue Road in the north with interchanges at SR 99 and Santa Fe Road.
- SR 99 ramp closures at Franklin Road and Buhach Road.

These improvements are shown in Figure 4.10-1(a). As noted from the figure, the AME alignment would provide access to SR 99 via the new southbound and northbound ramps and also to Santa Fe Drive via the new ramps. The AME alignment would result in four new analysis intersections for the future year. Because the SR 99 ramps at Buhach Road and Franklin Road would be closed under the future conditions, these ramp intersections are not analyzed for future conditions.

Figure 5.3-7 presents the intersection geometry for future year (2035) conditions. Future year (2035) volumes for all existing intersection were developed based on the methodology described in Section 5.2. For the new intersections along the AME alignment, future volumes were based on the volumes presented in the *Draft Final Report Traffic Analysis for the Atwater-Merced Expressway Project Report* (MCAG 2007b). The future year (2035) volumes for the four new intersections were developed by applying a growth factor on the post processed 2030 future year intersection volumes presented in the report. The future year (2035) No Project condition volumes for the AM and PM peak hours are presented in Figures 5.3-8(a) through 5.3-8(e).

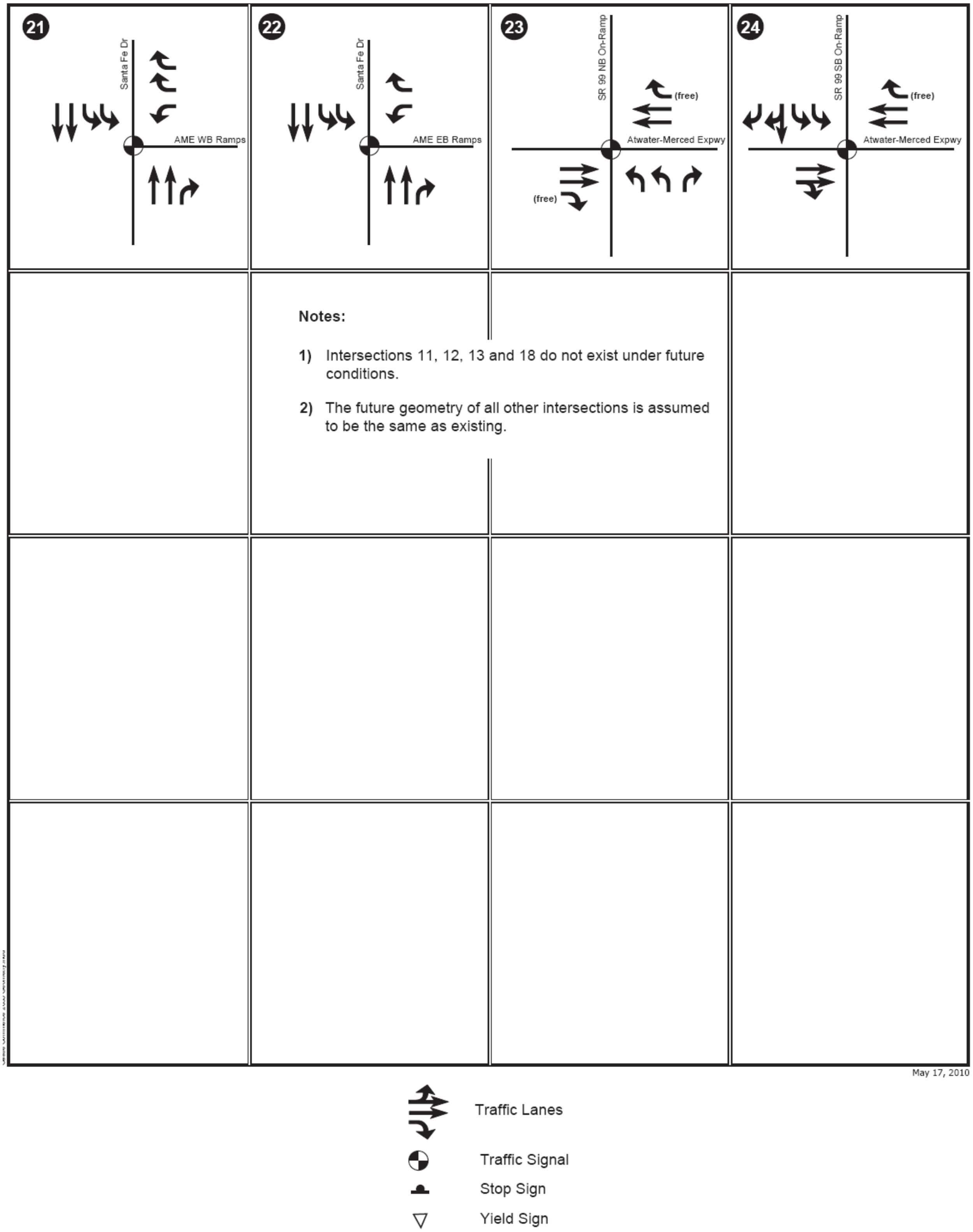


Figure 5.3-7
Future Year (2035) Intersection Geometry – Castle Commerce Center HMF

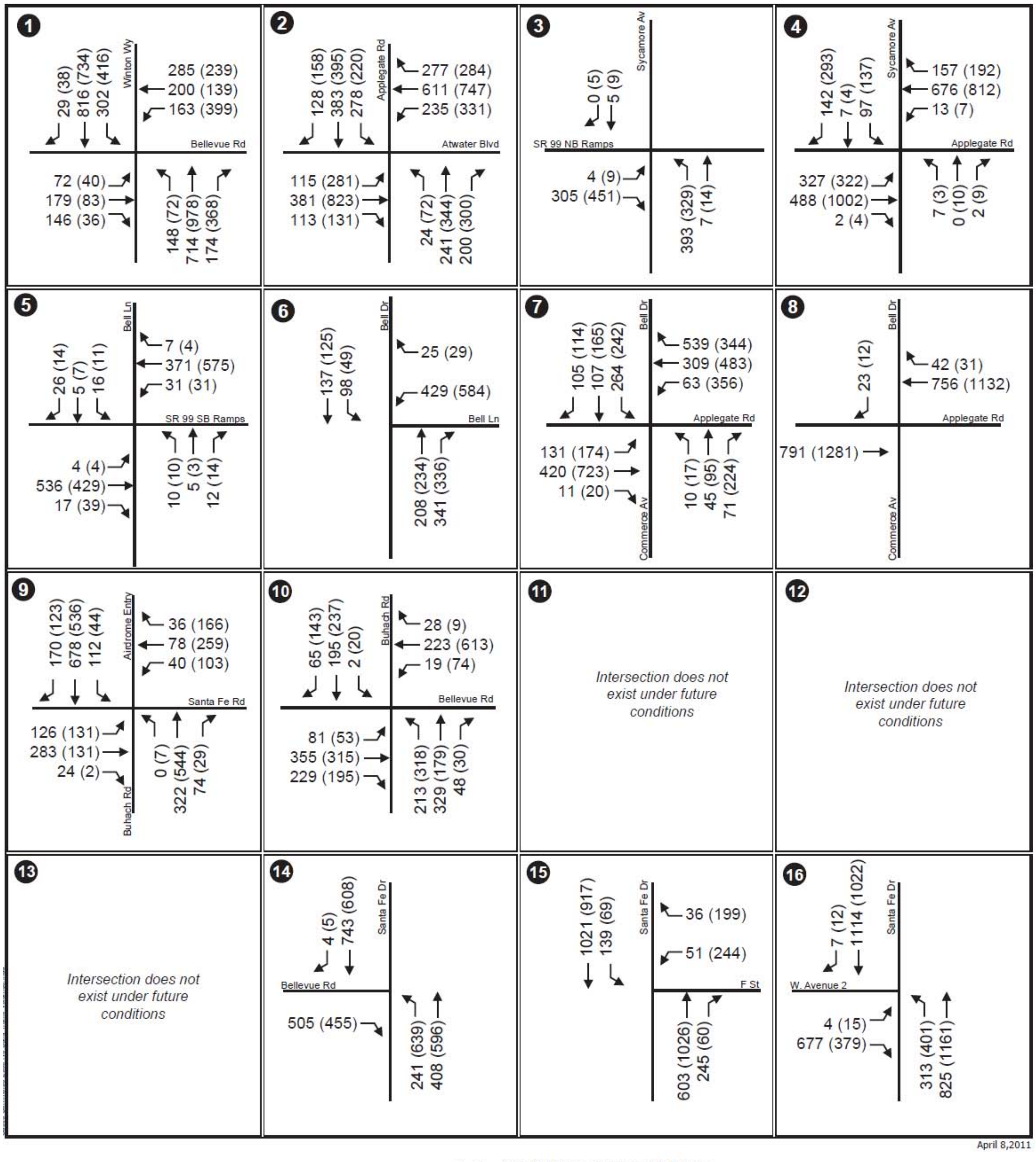
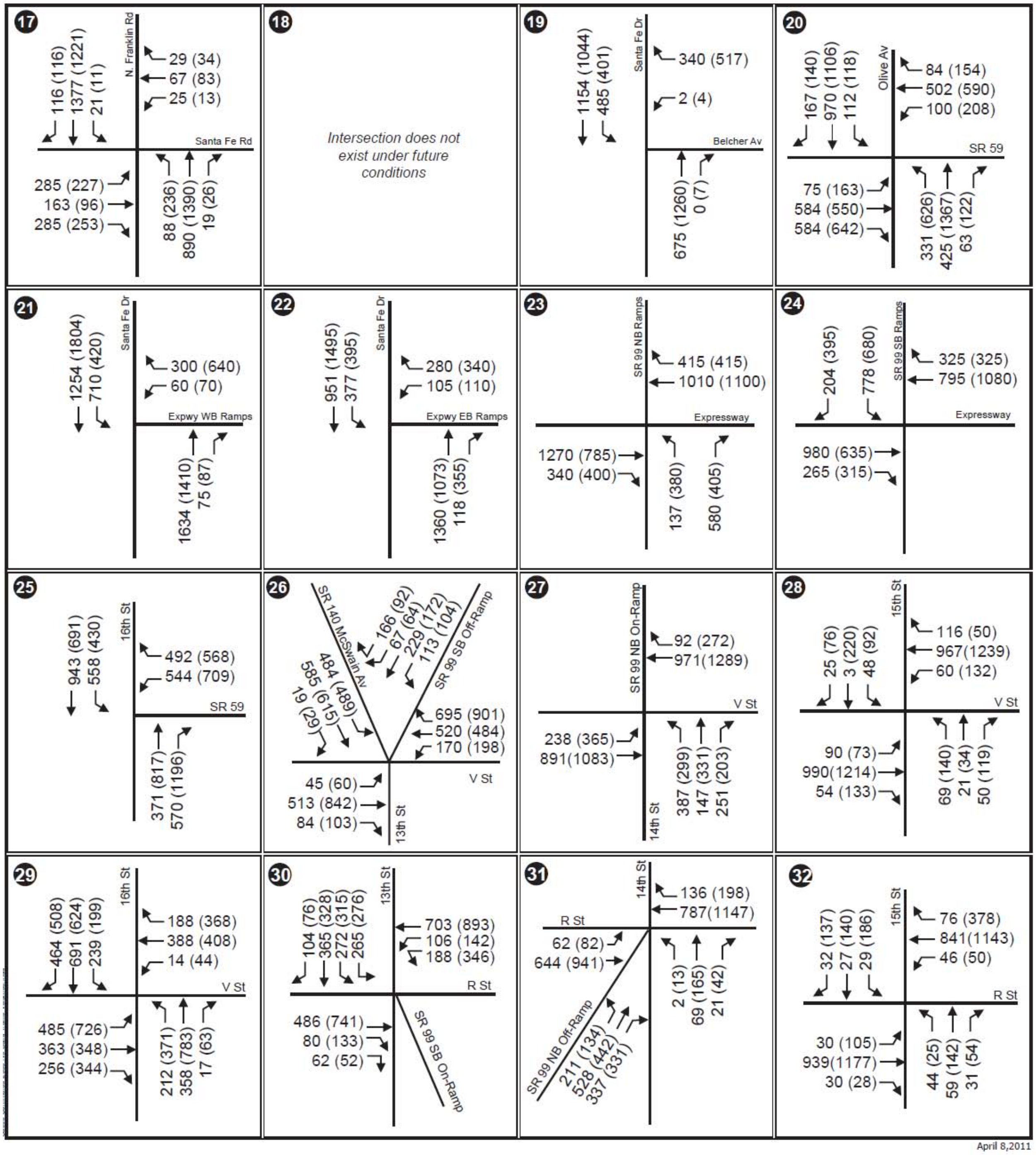
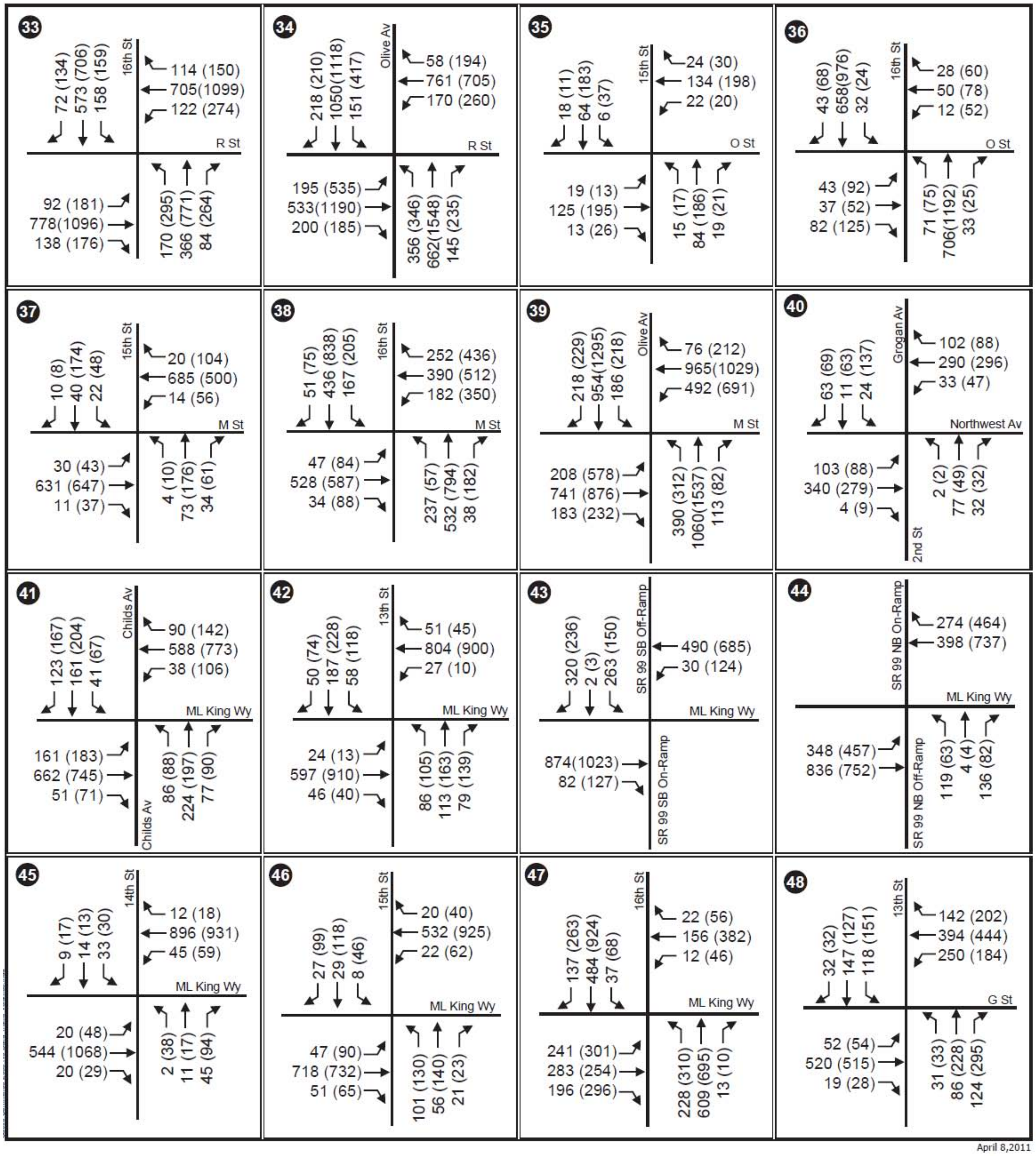


Figure 5.3-8 (a)
Future Year (2035) No Project Volumes – Castle Commerce Center HMF



xx (xx) AM (PM) Peak Hour Volumes

Figure 5.3-8(b)
Future Year (2035) No Project Volumes – Castle Commerce Center HMF



xx (xx) AM (PM) Peak Hour Volumes

Figure 5.3-8(c)
Future Year (2035) No Project Volumes – Castle Commerce Center HMF

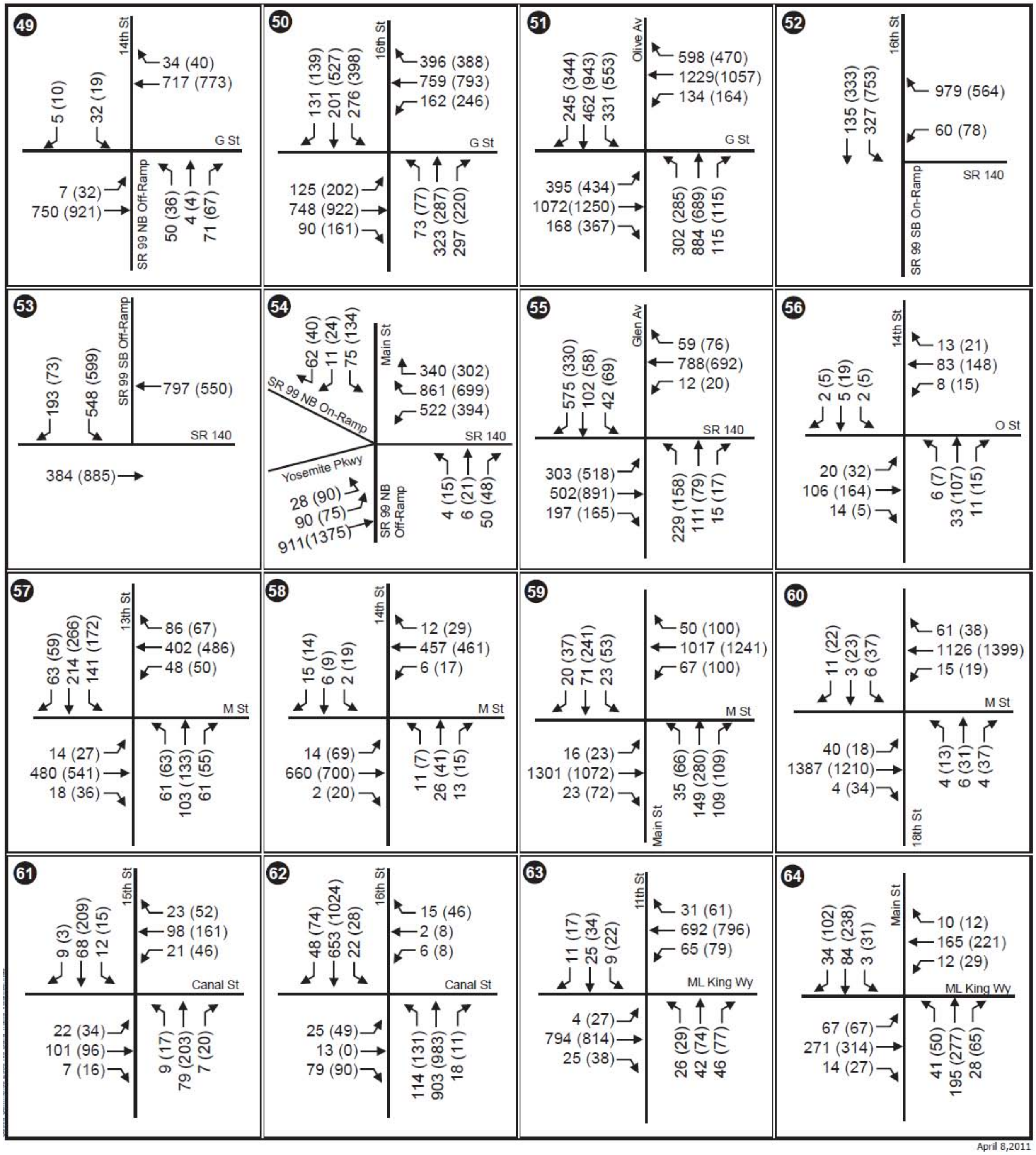
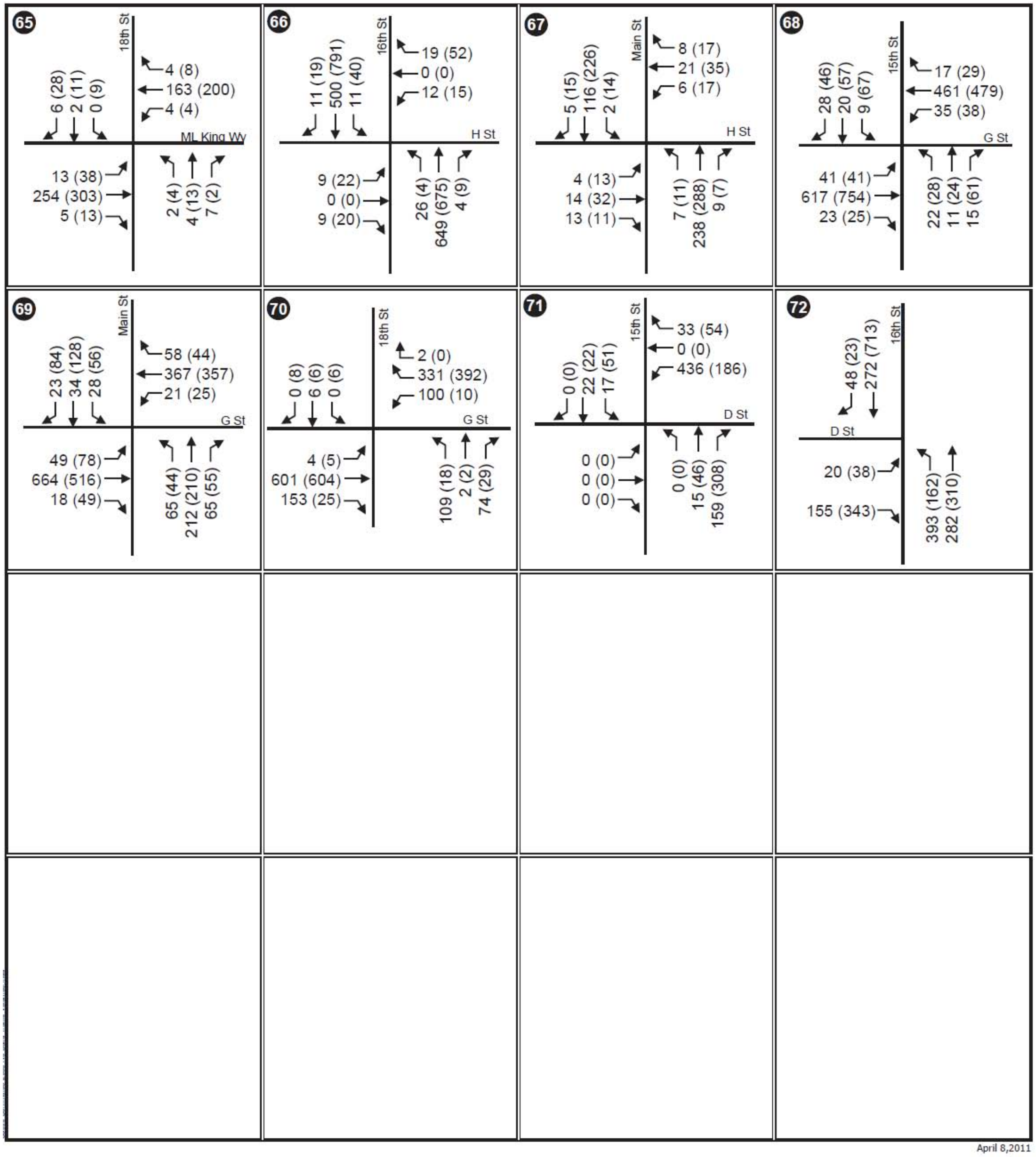


Figure 5.3-8(d)
Future Year (2035) No Project Volumes – Castle Commerce Center HMF



xx (xx) AM (PM) Peak Hour Volumes

Figure 5.3-8(e)
Future Year (2035) No Project Volumes – Castle Commerce Center HMF

Based on the future year geometry and future year (2035) No Project volumes, intersection analysis was performed for the AM and PM peak hours. The results of the analysis are presented in Table 5.3-9 and LOS calculation sheets are presented in Appendix C.

Table 5.3-9
Future Year (2035) No Project Intersection
Operating Conditions – Castle Commerce Center HMF

			2035 No Project			
			AM Peak Hour		PM Peak Hour	
	Intersection	Control	LOS	Del (sec)	LOS	Del (sec)
1	N Winton Way/Bellevue Rd	Signalized	C	30.1	D	43.2
2	Atwater Boulevard/Winton Way	Signalized	D	44.7	F	>80
3	Sycamore Ave/SR 99 NB Ramps[a]	Unsignalized	A	9.9	B	11.3
4	Sycamore Ave/Applegate Rd	Signalized	D	36.9	F	>80
5	Bell Ln/Bell Dr/SR 99 SB Ramps	Signalized	C	24.6	C	25.0
6	Bell Dr/Bell Ln	Signalized	C	20.9	C	20.8
7	Bell Ln – Commerce Ave/Applegate Rd	Signalized	C	28.4	C	32.4
8	Mall Access/Applegate Rd[a]	Unsignalized	B	10.1	B	11.0
9	N Buhach Rd/Santa Fe Dr/Airdome Entry	Signalized	C	22.7	C	26.0
10	N Buhach Rd/E Bellevue Rd	Signalized	C	28.1	C	30.9
14	Santa Fe Dr/E Bellevue Rd	Signalized	B	19.1	B	12.7
15	Santa Fe Dr/F St	Signalized	A	8.8	B	12.9
16	Santa Fe Dr/W Ave 2[a]	Unsignalized	F	>50	F	>50
17	Santa Fe Dr/N Franklin Rd	Signalized	E	56.0	D	46.9
19	Santa Fe Dr/Belcher Ave[a]	Unsignalized	C	20.5	F	>50
20	Santa Fe Dr/W Olive Ave/SR 59	Signalized	E	56.2	F	>80
21	Santa Fe Dr/AME SB Ramps	Signalized	C	21.8	C	23.9
22	Santa Fe Dr/AME NB Ramps	Signalized	B	19.7	C	21.2
23	SR 99 NB Ramps/AME	Signalized	C	21.0	B	16.5
24	SR 99 SB Ramps/AME	Signalized	C	20.0	B	18.5
25	16th St/SR 59 [a]	Unsignalized	F	>50	F	>50
26	13th St - SR 99 SB Off-ramp/V St	Signalized	F	>80	F	>80
27	14th St - SR 99 NB On-ramp/V St	Signalized	C	23.3	C	30.7
28	15th St/V St	Signalized	B	17.2	C	28.7
29	16th St/V St	Signalized	E	57.6	F	>80

Intersection		Control	2035 No Project			
			AM Peak Hour		PM Peak Hour	
			LOS	Del (sec)	LOS	Del (sec)
30	13th St/R St	Signalized	B	17.4	C	33.0
31	SR 99 NB Off-ramp - 14th St/R St	Signalized	C	23.1	C	24.3
32	15th St/R St	Signalized	B	16.4	C	26.5
33	16th St/R St	Signalized	C	33.9	D	46.7
34	Olive Ave/R St	Signalized	E	59.5	F	>80
35	15th St/O St[b]	Unsignalized	A	8.6	B	11.5
36	16th St/O St	Signalized	C	21.0	C	22.1
37	15th St/M St[b]	Unsignalized	F	>50	F	>50
38	16th St/M St	Signalized	D	36.0	D	43.8
39	Olive Ave/M St	Signalized	F	>80	F	>80
40	2nd St/Grogan Ave/Northwest Ave[b]	Unsignalized	C	16.6	C	16.9
41	Childs Ave/Martin Luther King Jr. Way	Signalized	E	56.7	F	>80
42	13th St/Martin Luther King Jr. Way	Signalized	C	26.8	C	32.7
43	SR 99 SB Ramps/Martin Luther King Jr. Way[a]	Unsignalized	F	>50	F	>50
44	SR 99 NB Ramps/Martin Luther King Jr. Way[a]	Unsignalized	F	>50	F	>50
45	14th St/Martin Luther King Jr. Way[a]	Unsignalized	F	>50	F	>50
46	15th St/Martin Luther King Jr. Way	Signalized	B	13.9	B	17.6
47	16th St/Martin Luther King Jr. Way	Signalized	C	33.3	F	>80
48	13th St/G St[b]	Unsignalized	F	>50	F	>50
49	SR 99 - 14th St/G St[a]	Unsignalized	E	39.6	F	>50
50	16th St/G St	Signalized	D	39.7	D	51.6
51	Olive Ave/G St	Signalized	F	>80	F	>80
52	SR 99 SB On-ramp/SR 140[a]	Unsignalized	C	19.6	F	>50
53	SR 99 SB Off-ramp/SR 140[a]	Unsignalized	F	>50	F	>50
54	SR 99 NB Off-ramp/Yosemite Parkway[a]	Unsignalized	F	>50	F	>50
55	Motel Dr/Glen Ave/Yosemite Parkway (SR 140)	Signalized	F	>80	F	>80
56	14th St / O St[a]	Unsignalized	B	10.6	B	14.0
57	13th St / M St[b]	Unsignalized	F	>50	F	>50

	Intersection	Control	2035 No Project			
			AM Peak Hour		PM Peak Hour	
			LOS	Del (sec)	LOS	Del (sec)
58	14th St / M St[a]	Unsignalized	D	26.8	E	42.6
59	Main St / M St	Signalized	B	11.8	B	18.7
60	18th St / M St	Signalized	B	13.0	B	14.4
61	15th St / Canal St[a]	Unsignalized	B	12.1	C	21.0
62	16th St / Canal St[a]	Unsignalized	F	>50	F	>50
63	11th St / Martin Luther King Jr. Way[a]	Unsignalized	F	>50	F	Overflow
64	Main St / Martin Luther King Jr. Way	Signalized	A	9.9	B	10.9
65	18th St / Martin Luther King Jr. Way[b]	Unsignalized	A	8.6	A	9.6
66	16th St / H St[a]	Unsignalized	C	16.2	D	28.3
67	Main St / H St[a]	Unsignalized	B	11.2	B	13.6
68	15th St / G St[a]	Unsignalized	D	27.2	F	>50
69	Main St / G St	Signalized	B	18.3	C	21.2
70	18th St / G St	Signalized	A	9.2	A	4.5
71	15th St / D St[a]	Unsignalized	D	32.4	C	17.5
72	16th St / D St[a]	Unsignalized	E	39.4	E	39.3

Notes:
[a] One-way or two-way stop controlled intersection. LOS and delay reported for the worst movement.
[b] All-way stop controlled intersection, average delay reported.
Intersections 11, 12, 13 and 18 do not exist under future conditions.

As indicated in Table 5.3-9, 30 of 72 analyzed intersections operate at LOS E or F under the future year (2035) No Project AM and/or PM peak hour conditions.

5.3.7 Harris-DeJager Heavy Maintenance Facility

Future roadway improvements in the vicinity of the Harris-DeJager HMF include the following:

- New interchange at Sandy Mush Road/Plainsburg Road.
- East frontage road connecting Athlone Road in the north to Harvey Pettit Road in the south east of SR 99.
- West frontage road connecting Athlone Road in the north to Cross Road/Vista Road in the south west of SR 99.

Future improvements involve closure of existing direct freeway access from Athlone Road, Buchanan Hollow Road, Plainsburg Road, and Harvey Pettit Road on the east side of the freeway and Athlone Road and Sandy Mush Road on the west side of the freeway. Traffic on these roadways would be diverted onto the east and west frontage roads to access the freeway via the new ramps at the Sandy Mush Road/ Plainsburg Road interchange. The future roadway improvements are presented in Figure 4.10-4.

Because of the new ramp interchange and closure of existing direct freeway access at Sandy Mush Road/ Plainsburg Road, Intersection 3 is not studied in the future conditions. The two new ramp intersections are studied for the future conditions. Future year (2035) intersection geometry is presented in Figure 5.3-9.

Future year (2035) volumes were developed based on the methodology described in Section 5.2. The future year (2035) No Project condition volumes for the AM and PM peak hours are presented in Figure 5.3-10. Based on the future year geometry and future year (2035) No Project volumes, intersection analysis was performed for the AM and PM peak hours. The results of the analysis are presented in Table 5.3-10 and LOS calculation sheets are presented in Appendix C. As indicated in Table 5.3-10, three intersections operate at LOS D or better conditions and three intersections operated at LOS E or F under future no project conditions.

Table 5.3-10
Future Year (2035) No Project Intersection
Operating Conditions – Harris-DeJager HMF

			2035 No Project			
			AM Peak Hour		PM Peak Hour	
Intersection		Control	LOS	Del (sec)	LOS	Del (sec)
1	SR 59/E Sandy Mush Road[a]	U	E	36.8	F	>50
2	S. Bliss Road/E Sandy Mush Road[a]	U	A	9.2	A	9.1
4	Hemlock Road/SR 152[a]	U	F	>50	F	>50
5	Road 13/SR 152[a]	U	F	>50	F	>50
6	Sandy Mush Road/SR 99 SB Ramps	S	B	14.1	A	6.1
7	Plainsburg Road/SR 99 NB Ramps	S	B	15.4	B	17.7

Intersection 3 does not exist under future conditions.

[a] One-way or two-way stop controlled intersection. LOS and delay reported for the worst movement.

U = Unsignalized; S = Signalized

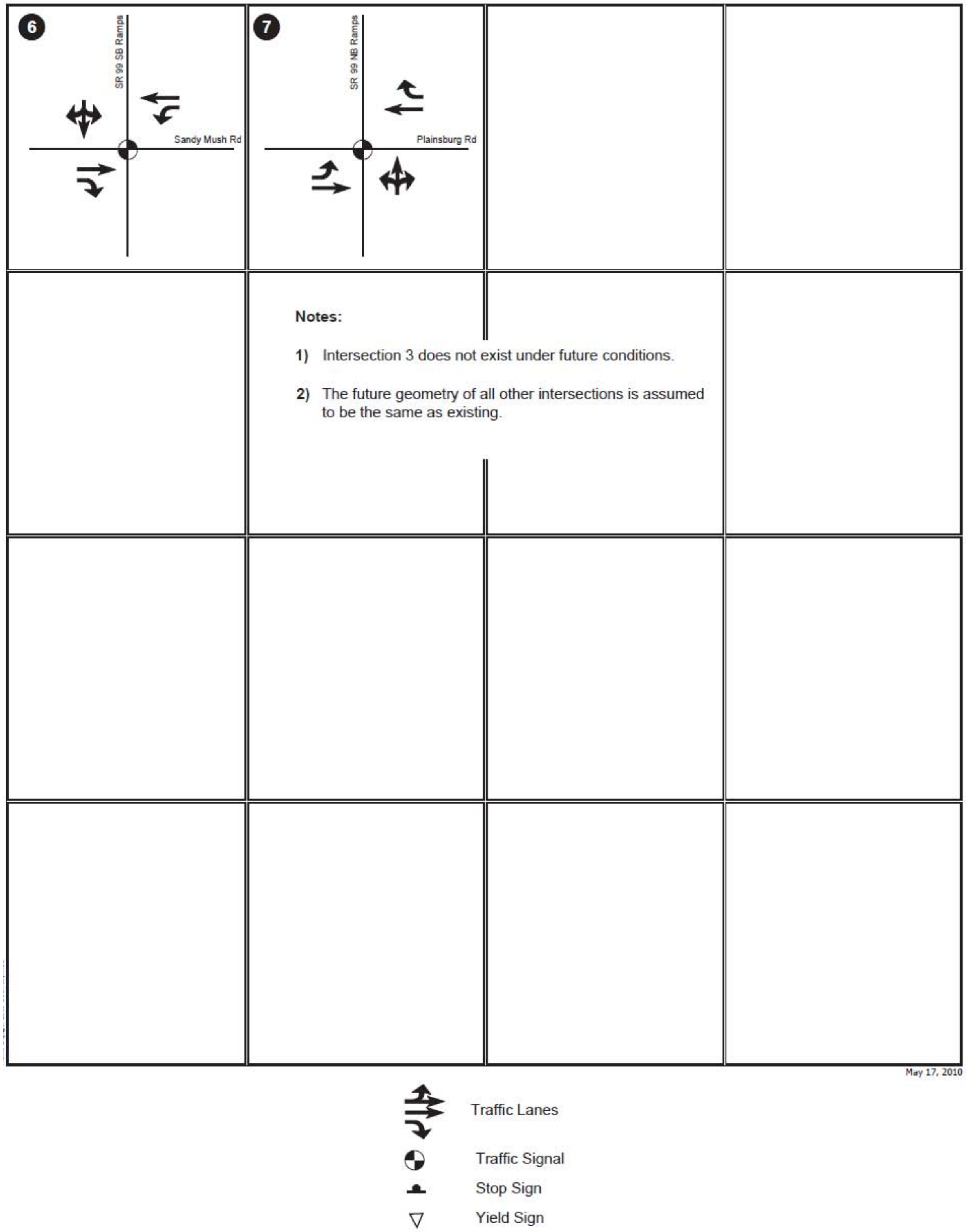
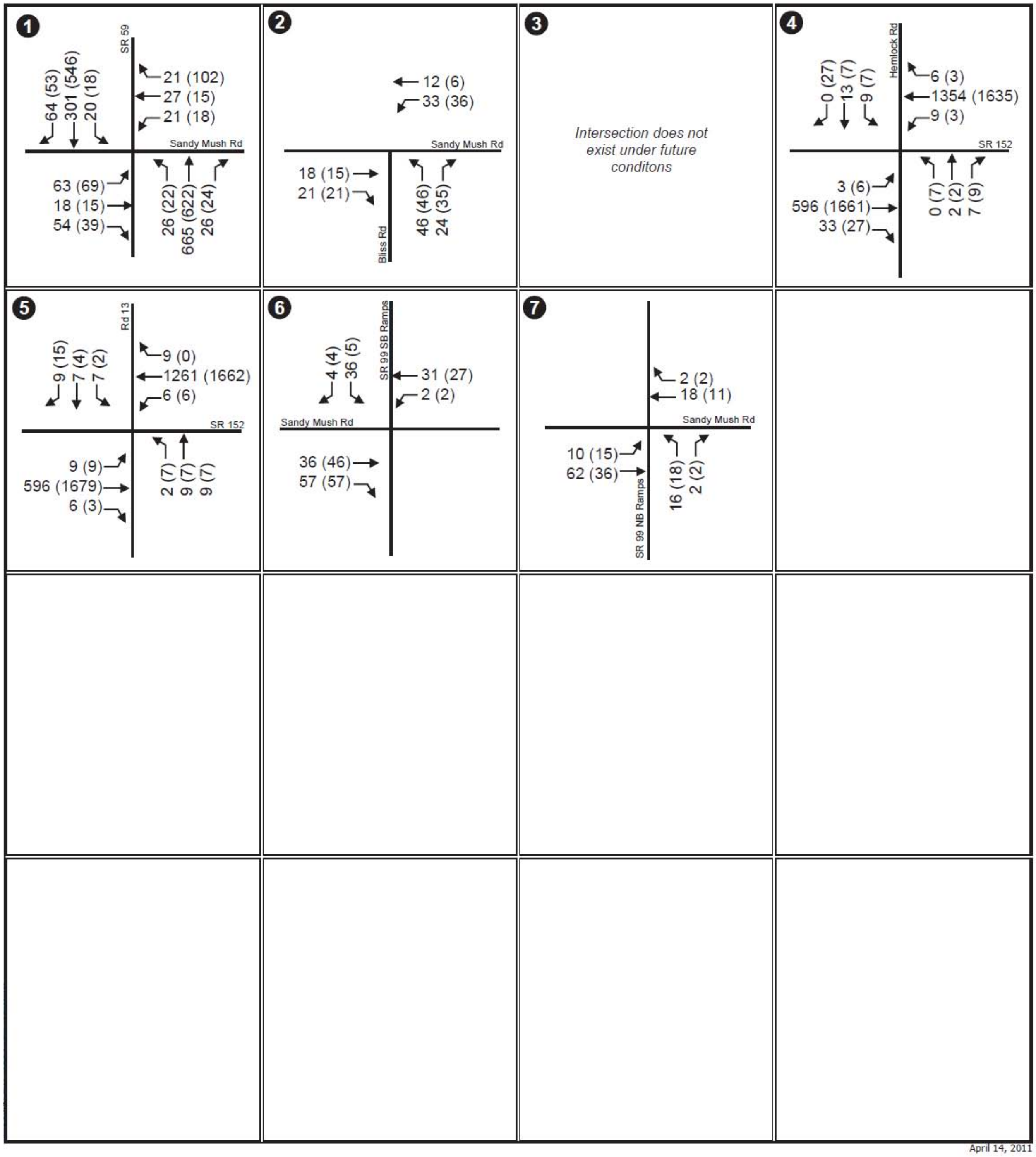


Figure 5.3-9
Future Year (2035) Intersection Geometry – Harris-DeJager HMF



xx (xx) AM (PM) Peak Hour Volumes

Figure 5.3-10
Future Year (2035) No Project Intersection Volumes – Harris-DeJager HMF

5.3.8 Fagundes Heavy Maintenance Facility

Future roadway improvements in the vicinity of the Fagundes HMF include the following:

- New interchange at Sandy Mush Road/Plainsburg Road.
- East frontage road connecting Athlone Road in the north to Harvey Pettit Road in the south east of SR 99.
- West frontage road connecting Athlone Road in the north to Cross Road/Vista Road in the south west of SR 99.

Future improvements involve the closure of existing direct freeway access from Athlone Road, Buchanan Hollow Road, Plainsburg Road, and Harvey Pettit Road on the east side of the freeway and Athlone Road and Sandy Mush Road on the west side of the freeway. Traffic on these roadways would be diverted onto the east and west frontage roads to access the freeway via the new ramps at the Sandy Mush Road/ Plainsburg Road interchange. The future roadway improvements are presented in Figure 4.10-7.

The two new ramp intersections were studied for the future conditions. Future year (2035) study intersection geometry is presented in Figure 5.3-11. Future year (2035) volumes were developed based on the methodology described in Section 5.2. The future year (2035) No Project condition volumes for the AM and PM peak hours are presented in Figure 5.3-12. Based on the future year geometry and future year (2035) No Project volumes, intersection analysis was performed for the AM and PM peak hours. The results of the analysis are presented in Table 5.3-11 and LOS calculation sheets are presented in Appendix C. As indicated in Table 5.3-11, 5 of 10 intersections operate at LOS E or F under the future year (2035) No Project conditions.

Table 5.3-11
Future Year (2035) No Project Intersection Operating Conditions around Proposed Fagundes HMF

			2035 No Project			
			AM Peak Hour		PM Peak Hour	
	Intersection	Control	LOS	Del (sec)	LOS	Del (sec)
1	Road 12/SR 152 – Ave 23[a]	U	C	15.1	F	>50
2	Road 13/SR 152 – Ave 23[a]	U	E	41.9	F	>50
3	SR 233/SR 152 EB Ramps[a]	U	B	11.4	B	12.4
4	SR 233/SR 152 WB Ramps[a]	U	B	11.4	B	12.0
5	SR 233/Ave 24½[a]	U	C	20.6	C	20.1
6	SR 233/Ave25	U	F	>50	F	>50
7	SR 99 SB Ramps/SR 233 – Ave 26[a]	U	F	>50	F	>50
8	SR 99 NB Ramps/SR 233 – Ave 26[a]	U	F	>50	F	>50
9	SR 99 SB Ramps/Sandy Mush Road	S	B	14.1	A	6.1
10	SR 99 NB Ramps/Sandy Mush Road	S	B	15.4	B	17.7

[a] One-way or two-way stop controlled intersection. LOS and delay reported for the worst movement.
U = Unsignalized; S = Signalized

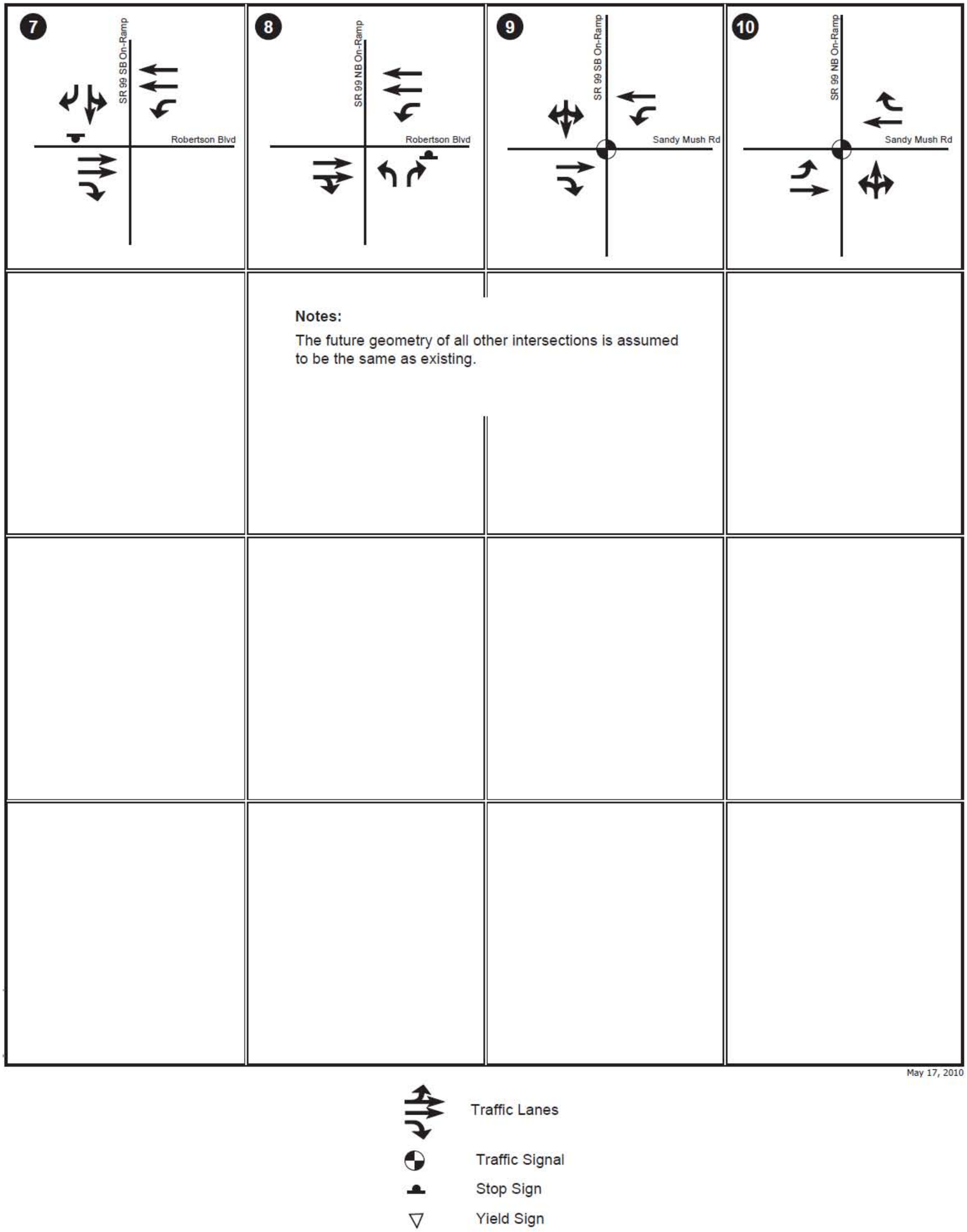


Figure 5.3-11
Future Year (2035) Intersection Geometry – Fagundes HMF

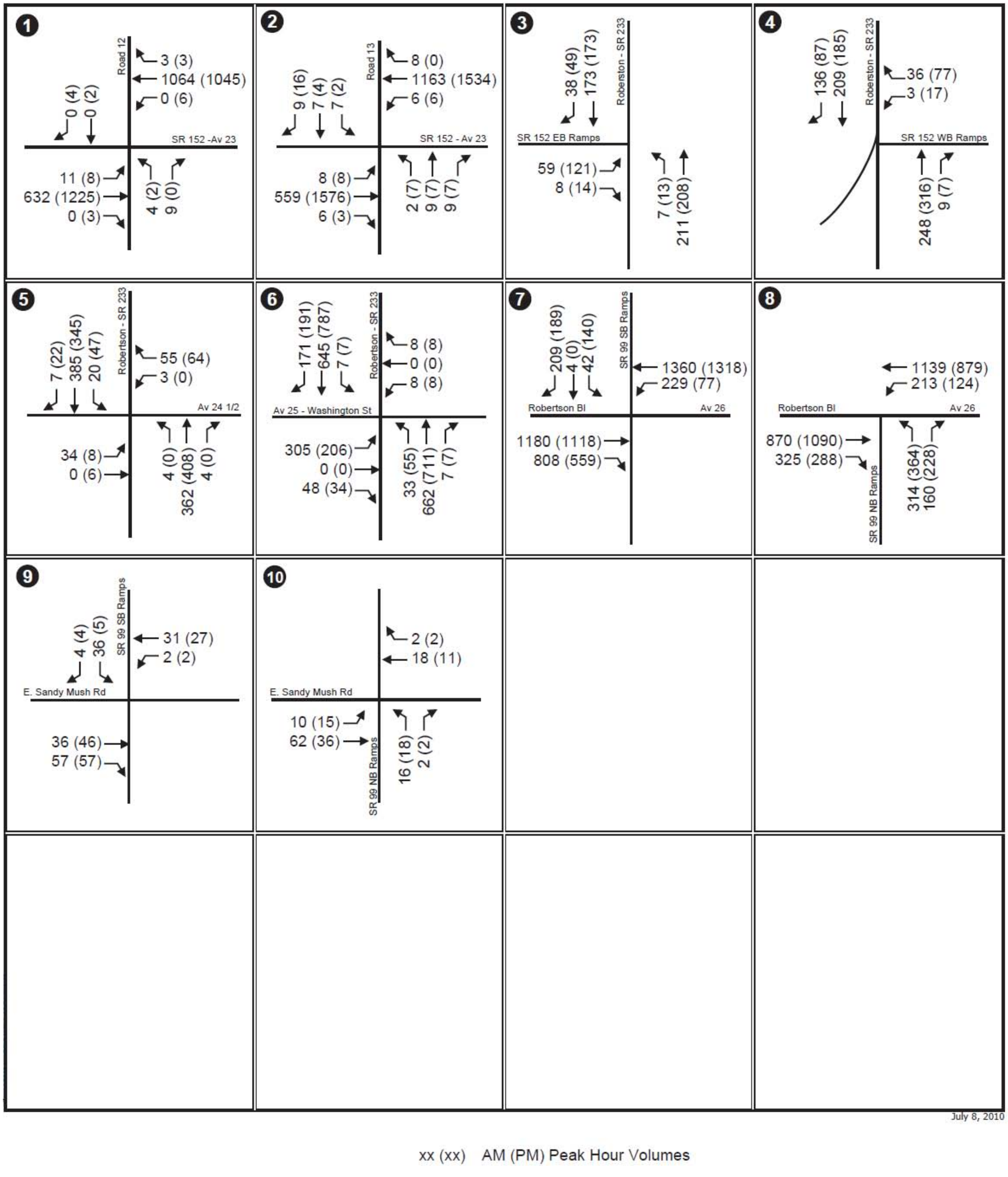


Figure 5.3-12
Future Year (2035) No Project Volumes – Fagundes HMF

5.3.9 Gordon-Shaw Heavy Maintenance Facility

Future year (2035) volumes were developed based on the methodology described in Section 5.2. The future year (2035) No Project condition volumes for the AM and PM peak hours are presented in Figure 5.3-13. Existing intersection geometry was used for future year analysis conditions.

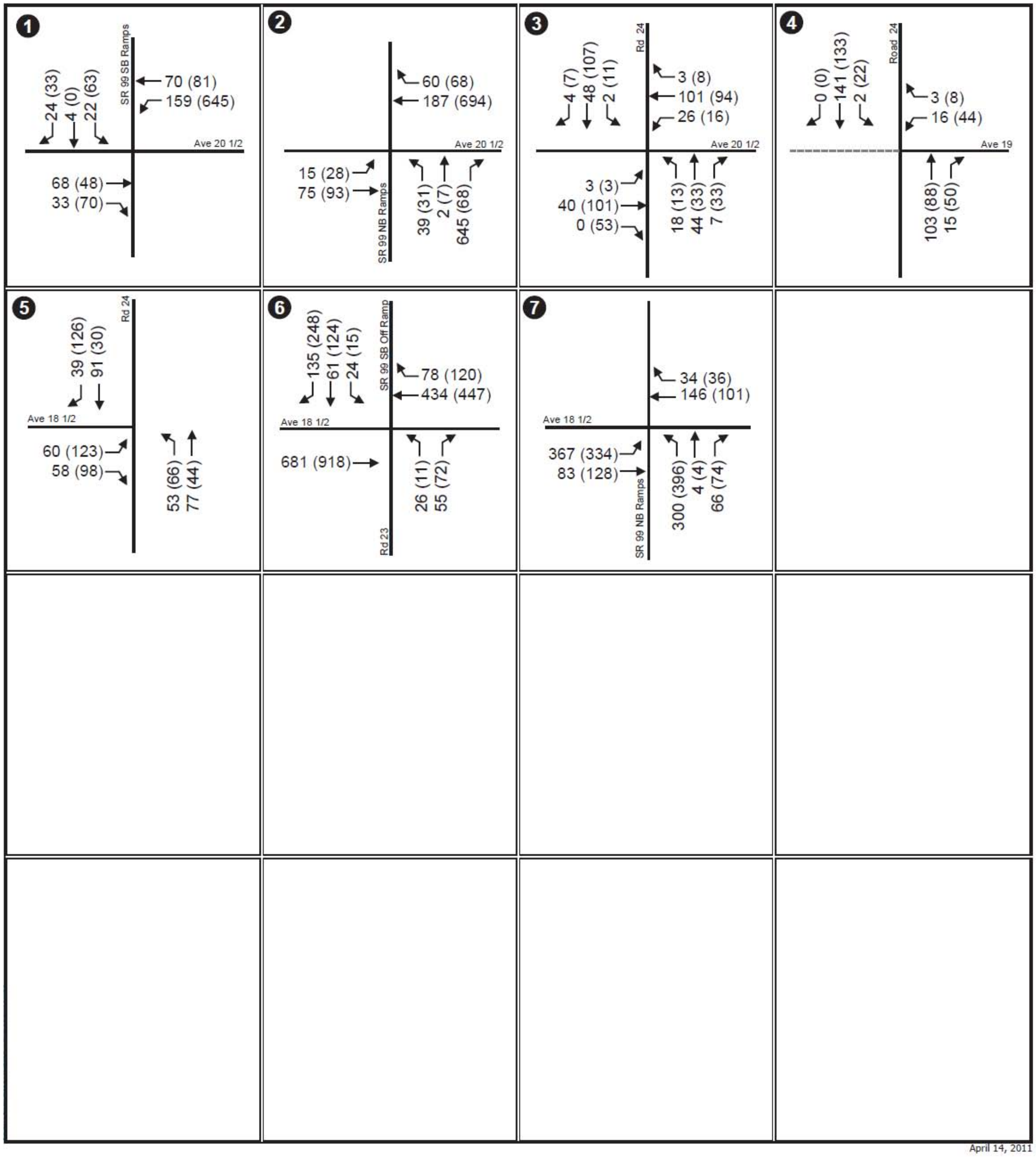
Based on the existing geometry and future year (2035) No Project volumes, intersection analysis was performed for the AM and PM peak hours. The results of the analysis are presented in Table 5.3-12 and LOS calculation sheets are presented in Appendix C.

Table 5.3-12
Future Year (2035) No Project Intersection Operating Conditions – Gordon-Shaw HMF

	Intersection	Control	2035 No Project			
			AM Peak Hour		PM Peak Hour	
			LOS	Del (sec)	LOS	Del (sec)
1	SR 99 SB Ramps/Ave 20½[a]	U	B	11.0	F	>50
2	SR 99 NB Ramps/Ave 20½[a]	U	C	17.4	B	13.2
3	Road 24/Ave 20½[b]	U	A	7.8	A	8.3
4	Road 24/Ave 19[a]	U	A	9.8	B	10.3
5	Road 24/Ave 18½[a]	U	B	10.3	B	11.2
6	SR 99 SB Ramps/Ave 18½[a]	U	F	>50	F	>50
7	SR 99 NB Ramps/Ave 18½[a]	U	F	>50	F	>50

[a] One-way or two-way stop controlled intersection. LOS and delay reported for the worst movement.
[b] All-way stop controlled intersection, average delay reported.
U = Unsignalized

As shown in Table 5.3-12, all intersections operate at LOS D or better conditions except the SR 99 southbound ramps at Avenue 201/2 that operates at LOS F under PM peak hour and SR 99 northbound and southbound ramp intersections at Avenue 18½, which operate at LOS F under both AM and PM peak hours.



xx (xx) AM (PM) Peak Hour Volumes

Figure 5.3-13
Future Year (2035) No Project Volumes – Gordon-Shaw HMF

5.3.10 Kojima Development Heavy Maintenance Facility

Future roadway improvement in the vicinity of the Kojima Development HMF includes widening of Robertson Boulevard east of SR 99 from a two-lane roadway to a four-lane roadway. Because of this improvement, existing geometry was modified at the ramp intersections on Robertson Boulevard. The future year (2035) geometry is presented in Figure 5.3-14.

Future year (2035) volumes were developed based on the methodology described in Section 5.2. The future year (2035) No Project condition volumes for the AM and PM peak hours are presented in Figure 5.3-15. Future year (2035) intersection geometry was used for future year analysis conditions. Based on the future geometry and future year (2035) No Project volumes, intersection analysis was performed for the AM and PM peak hours. The results of the analysis are presented in Table 5.3-13 and LOS calculation sheets are presented in Appendix C.

Table 5.3-13
Future Year (2035) No Project
Intersection Operating Conditions – Kojima Development HMF

	Intersection	Control	2035 No Project			
			AM Peak Hour		PM Peak Hour	
			LOS	Del (sec)	LOS	Del (sec)
1	SR 99 SB Ramps/E Robertson Blvd[a]	U	F	>50	F	>50
2	SR 99 NB Ramps/E Robertson Blvd[a]	U	F	>50	F	>50
3	Road 19/Ave 26[a]	U	A	9.6	B	9.8
4	Santa Fe Dr/Ave 26[a]	U	B	10.9	B	11.5
5	Rd 22/Santa Fe Drive[a]	U	A	8.8	A	8.7
6	Rd 22/Ave 24[a]	U	C	24.2	B	13.8
7	SR 99 NB Ramps/Ave 24[a]	U	F	>50	D	31.4
8	SR 99 SB Ramps/Ave 24[a]	U	F	>50	C	23.8

[a] One-way or two-way stop controlled intersection. LOS and delay reported for the worst movement.
U = Unsignalized

As indicated in Table 5.3-13, four intersections operate at LOS F conditions in the AM and/or PM peak hours.

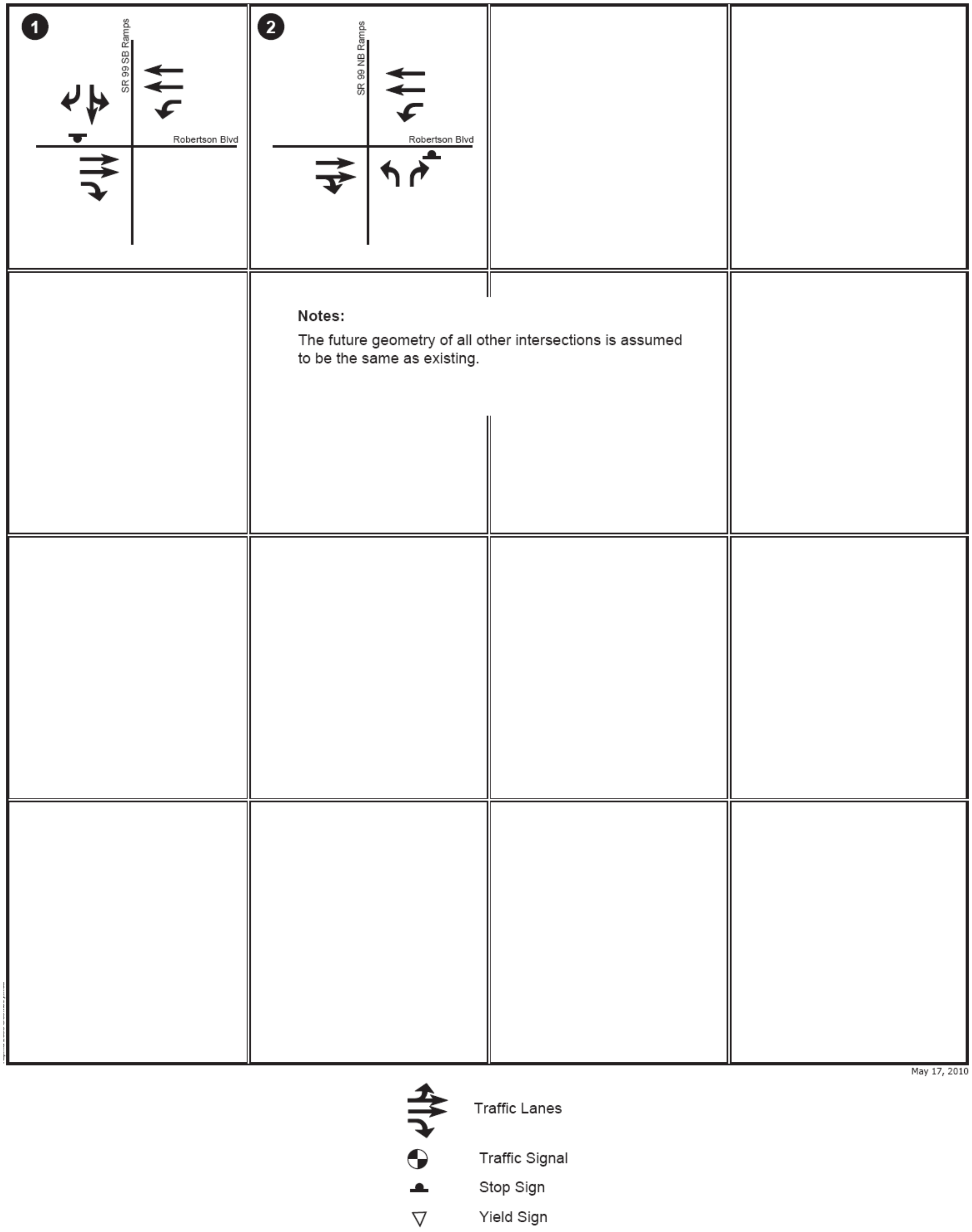
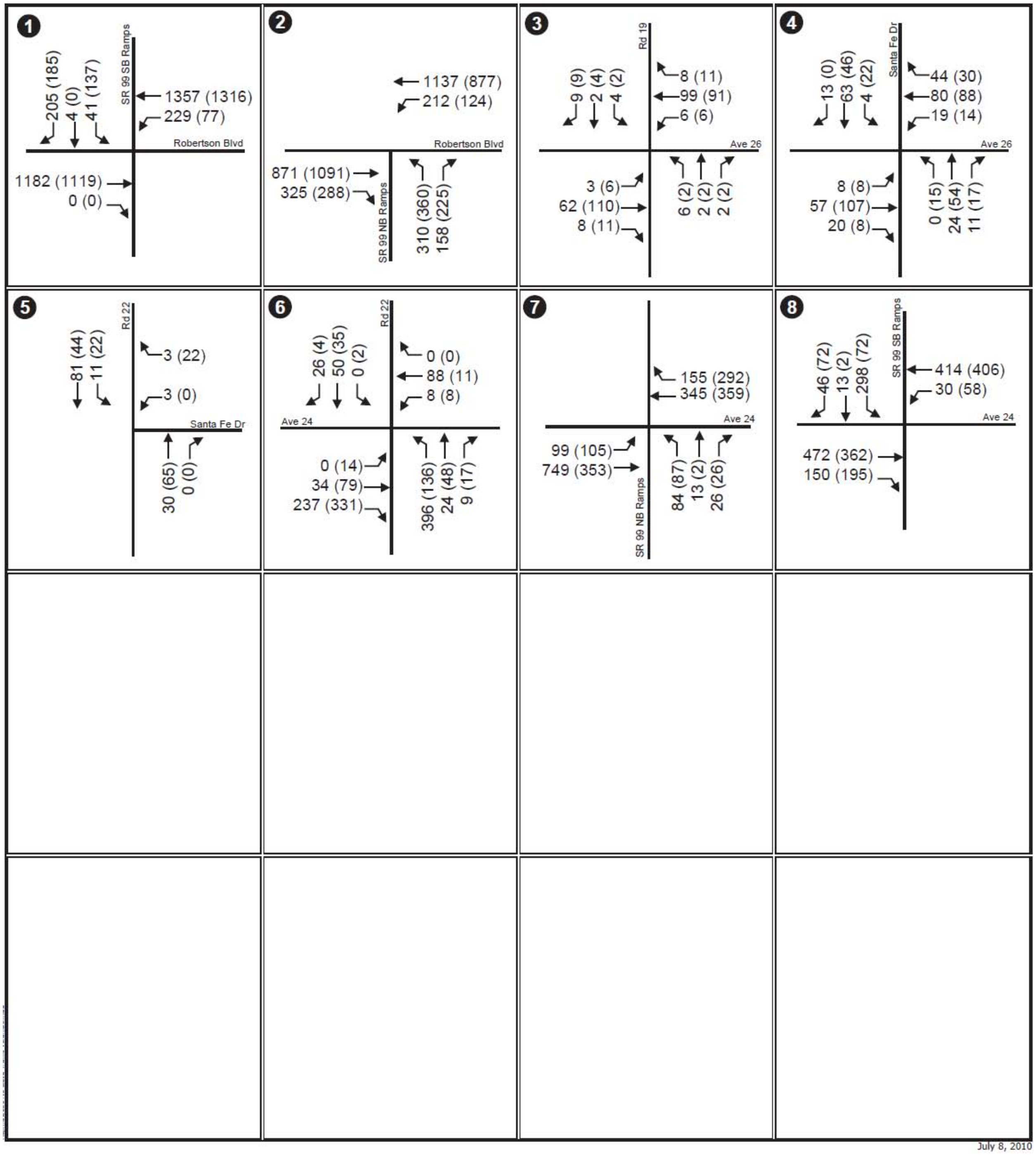


Figure 5.3-14
Future Year (2035) Intersection Geometry – Kojima Development HMF



xx (xx) AM (PM) Peak Hour Volumes

Figure 5.3-15
Future Year (2035) No Project Volumes – Kojima Development HMF

5.4 Freeway Analysis

SR 99 is the primary freeway in the study area that would be affected by the project. As indicated in Section 4.17, the existing annual daily traffic volumes along SR 99 corridor range from 38,000 to over 100,000; by future year 2030, these volumes are projected to be 84,000 to over 217,000. Under future year (2035) conditions, these volumes would increase even further. Without any improvements along the corridor, LOS would predominantly deteriorate to LOS E or F under future conditions.

As identified in Section 3.3.3, the RTPs for Merced, Madera, and Fresno counties establish an LOS standard of D for the entire regional road network. Any segment of the roadway that is worse than LOS D is considered to be a deficiency in the transportation system. Without any improvements along SR 99, this facility would be deficient in meeting the future needs.

With the project improvements described in the *Updated Route 99 Corridor Business Plan*, which largely comprise the 2030 Concept Facility, most segments would be at LOS D or better. However, some segments in the urbanized areas along the route would still be at LOS E or F. Those segments where LOS better than E or F cannot be achieved with highway improvements would have to depend upon other modes or parallel corridor enhancements to improve mainline LOS.

6.0 Project Conditions

This section presents the direct and indirect impacts of the proposed HST alternatives on transportation facilities and conditions. The HST system would provide a new regional surface transportation system that complements and connects with existing transportation modes. At a regional level, HST service would reduce VMT by providing motorists an alternative to relying on existing interregional and intercity freeways and highways. The HST system would be grade-separated from freeways, highways, and roads, allowing vehicular traffic to pass unimpeded under or over the rail corridor.

Throughout the final design and implementation of the proposed project, the project would continue to work with local and regional transportation agencies to do the following:

- Develop and implement transit-oriented development strategies around the HST stations.
- Coordinate transit services and increase service and/or add routes, as necessary, to serve the HST station areas.

6.1 Introduction

This section analyzes 2035 transportation conditions for the HST project. Potential impacts are analyzed for vehicle traffic accessing the Merced and Fresno stations, for vehicle traffic associated with alternative Heavy Maintenance Facilities sites, and for traffic associated with a potential SR 99 realignment. Traffic volumes generated by the project are superimposed on the 2035 No Project Conditions analyzed in the previous section. Also discussed are project benefits resulting from reductions in long distance vehicle trips and corresponding reductions in freeway volumes and vehicle miles traveled.

As described in Section 2, Project Description, the HST project includes three alternative alignments, and several alternative wye connections and potential HMF sites. The following sections describe the key transportation features and impacts of these alternatives. Specific project impacts on roadways along the alignment are summarized in Appendix A.

Coordination with the Coast Guard was conducted, and the Coast Guard indicated that this project is not within its jurisdiction (Sulouff, D.H., June 2011). Therefore, no analysis of the project on the waterways is presented in this report.

6.2 Methodology

The project daily and peak-hour station-generated trips were derived from information provided in the *Station Area Parking Guidance Technical Memorandum* (Authority 2010). The data provided design-day daily boardings for the stations being analyzed for the Merced to Fresno segment. For development of the traffic studies for each of the station areas, ridership data and factors were provided including total daily ridership projections, peak-hour conversion percentages, distribution of the trips by mode, vehicle occupancy factors, parking accumulation factors, transfers from other transit percentages, and boarding-to-alighting ratios for the peak hours.

6.3 Trip Generation

6.3.1 Stations

Future project-only trip generation is based upon boardings and alightings of the HST riders who would use the proposed stations. For the Merced station, the projected boardings and alightings reflected the Phase 1 HST operation, as that plan yields higher usage at the station than the Full System operation, with HST service extended to Sacramento.

The Authority provided estimates of design-day boardings by station along with information on usage by time of day, mode of access, party size, and accumulation factor. The supplied boardings were segregated into the following access modes:

- Pick-up/drop-off
- Drive-parked vehicle
- Rental car
- Taxis
- Transit/shuttle
- Bike/walk/other

The projected boardings for each station were converted into vehicle trips based on the type of trip and party size (vehicle occupancy excluding non-boarding drivers). The following assumptions were made to arrive at the trips generated at the stations:

- Each vehicle picking up or dropping off a passenger(s) is assumed to enter the station area, stop at the curbfront, pick-up/drop off a passenger, and then leave. Therefore, each vehicle would account for two trips, one inbound and one outbound trip during the each peak hour.

- Private autos parking at the station are assumed to be using the onsite parking facilities for the duration of the rail journey. Boarding passengers parking at the station would have one inbound vehicle trip during the peak hour in which they arrive and alighting passengers would have one outbound vehicle trip during the peak hour in which they leave.

- Rental cars are proposed to be available at each of the proposed stations. Each rental car vehicle would generate one inbound trip for a boarding passenger and one outbound trip for an alighting passenger.

- Transit trips are assumed to be passenger trips using already available scheduled services operating during the year of analysis. No new transit services have been assumed. However, shuttle service was assumed for the Merced station connecting the station to the remote parking facilities under the dispersed parking option (Option B) discussed later.

- Taxis are assumed to provide on-demand service at the station. Boarding passengers would generate inbound taxi trip that would pickup alighting passengers generating outbound taxi trip. Some taxis are assumed to wait at the station for the next outbound trip.

Based on the above assumptions and the vehicle occupancy factors, vehicle trips have been generated for Merced station. A summary of the daily, AM peak hour, and PM peak hour vehicle trips generated for the proposed Merced HST station are summarized in Tables 6.3-1. A more detailed breakdown of the trip generation is provided in Appendix D.

Table 6.3-1
Vehicle Trip Generation at Merced HST Station

Station	Daily Trips	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Merced	5,927	556	227	833	227	556	833
Source: AECOM calculations based on Ridership Forecast Report, Authority 2010							

Table 6.3-2 presents the trip generation for proposed Fresno HST station. Trip generation assumed that 15% of the total daily trips would occur during the peak hour.

Table 6.3-2
Vehicle Trip Generation at Fresno HST Station

Station	Daily Trips	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Fresno	4,370	456	196	652	196	456	652

Source: Fresno to Bakersfield Section Transportation Technical Report, Authority and FRA 2011.

6.3.2 Maintenance Facilities

The heavy maintenance facilities are estimated to house approximately 1,300 employees. The employees were classified based on their operational function as maintenance shop employees, administration, crew and support or maintenance-of-way employees. Trip generation for heavy maintenance facilities was based on the number of employees, work shifts, number of non-employees (e.g., visitors) trips, and parking information. Administrative staff are assumed to be accessing the HMF facility during the day shift (7 a.m. to 3:30 p.m.), while maintenance employees access the HMF facility during all three shifts: day shift, evening shift (3 p.m. to 11:30 p.m.), and night shift (11 p.m. to 7:30 a.m.). Maintenance-of-way employees are primarily on the night shift.

It is assumed that 80% of the employees drive-alone to work and the rest use rideshare or transit. HST crew members are assumed to arrive or leave outside both the AM and PM peak hours, based on the operating hours of service.

Table 6.3-3 presents the summary of trip generation at the proposed heavy maintenance facility. It can be noted from the table that the facility is expected to generate approximately 2,000 daily trips with 729 trips each in the AM and PM peak hours.

Table 6.3-3
Vehicle Trip Generation at Heavy Maintenance Facility

Location	Daily Total	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Heavy Maintenance Facility	2,067	466	263	729	263	466	729

6.4 Project Impact Criteria

Impact criteria have been developed to govern impacts caused by the implementation of the HST project. The methods for evaluating impacts under NEPA and CEQA are described below.

6.4.1 Methods for Evaluating Impacts under NEPA

Pursuant to NEPA regulations (40 CFR 1500-1508), project effects are evaluated based on the criteria of context and intensity. Context means the affected environment in which a proposed project occurs. Intensity refers to the severity of the effect, which is examined in terms of the type, quality, and sensitivity of the resource involved, location and extent of the effect, duration of the effect (short- or long-term), and other consideration of context. Beneficial effects are identified and described. When there is no measurable effect, impact is found not to occur. Intensity of adverse effects is summarized as the degree or magnitude of a potential adverse effect where the adverse effect is thus determined to be negligible, moderate, or substantial. It is possible that a significant adverse effect may still exist when on balance the impact is negligible or even beneficial. For transportation, the terms are defined as follows:

A *negligible* impact on transportation is defined as a worsening in transportation service levels that is measureable, but not perceptible to the transportation system user. A *moderate* impact on transportation is defined as a worsening in transportation service levels that is measurable and perceptible to the transportation service user. A *substantial* impact on transportation is defined as an adverse effect on transportation service levels.

6.4.2 CEQA Significance Criteria

6.4.2.1 Operational Phase

The traffic impact criteria used in evaluating traffic LOS[2] for roadway segments, and for signalized and unsignalized intersections, during the project operational phase are presented below.

For roadway segments, the recommended thresholds of significance are based on increase in V/C ratio, as follows:

- An impact is considered to be significant if the addition of project-related traffic results in a reduction of LOS below LOS D
- For segments that are projected to operate at LOS E or F under the No Project conditions, an impact is considered to be significant if the addition of project-related traffic results in an increase of V/C ratio by 0.04 or more.

For signalized intersections, the recommended thresholds of significance are based on an increase in delay based on LOS, as follows:

- An impact is considered to be significant if the addition of project-related traffic results in a reduction in LOS to below LOS D.
- For intersections that are projected to operate at LOS E or F under the No Project conditions, an impact is considered to be significant if the addition of project-related traffic results in an increase in average delay at an intersection of 4 seconds.

For unsignalized intersections, the recommended thresholds of significance are based on an increase in delay for the worst movement for a multi-way stop and the average intersection delay for an all-way stop, as follows:

- An impact is considered to be significant if the addition of project-related traffic results in a reduction in LOS to below LOS D.
- For intersections that are projected to operate at LOS E or F under the No Project conditions, an impact is considered to be significant if the addition of project-related traffic results in an increase in delay for the worst approach or movement at an intersection by 5 seconds or more and the intersection satisfies one or more traffic signal warrants.

6.4.2.2 Construction Phase

The project would have a significant effect on the environment if it would do any of the following:

- Result in inadequate emergency access
- Substantially increase hazards due to a design feature (such as sharp curves or dangerous intersections) or incompatible uses (such as farm equipment), or create safety risks for pedestrians and bicyclists

[2] LOS analysis is done only for traffic in the study area affected by project operations once the HST commences operation. Traffic congestion from project construction would be temporary, so an LOS analysis would not be appropriate. Impacts from project construction focus on maintaining safety and access during construction.

6.5 Roadway and Intersection Operations along Alternatives

6.5.1 Effects on Regional Transportation System

All HST alternatives would reduce vehicle trips on the freeways due to the diversion inter-city trips from road trips to high-speed rail. This reduction in future vehicle trips (based on full system operation) would improve the operation of the regional roadway system (and reduce overall vehicle miles traveled) compared to the No Project Alternative. Likewise, inter-state commercial air trips would be diverted to HST. Information about these vehicle and air travel impacts is discussed below.

6.5.1.1 Freeway System

This section presents information relating to estimated reductions in vehicle trips on the freeways due to trip diversion from road trips to high-speed rail. The statewide travel demand model provided information about the origin and destination of HSR boardings (i.e., daily boarding riders) and also the modal split (percentage diverted from each mode) for business/commute and recreation/other travel purposes.

For the future year (2035), HSR riders traveling between Merced and other HST regions are presented in Table 6.5-1, and the same for Fresno are presented in Table 6.5-2. Also presented in these tables is the modal split for auto trips (i.e., auto trips diverted to HST). The daily boarding riders and previous auto mode information was used to arrive at the daily auto trips removed from the highway system based on the methodology presented below.

For example, it can be noted from Table 6.5-1 that of the 1,760 projected daily HST riders traveling between Merced and San Francisco, 89% were diverted from auto mode to the HST; 89% of 1,760 would be approximately 1,600 person trips (i.e., the riders who would otherwise use the highway system). To convert the daily person trips to daily auto trips, person trips were divided by the vehicle occupancy factor[3] provided in the *Station Area Parking Guidance Technical Memorandum* (Authority and FRA 2010). These daily auto trips are for one-way travel and are then doubled to arrive at the auto trips for travel in both directions (from Merced to San Francisco and San Francisco to Merced). These would be the total number of auto trips diverted from the highway system to HST.

Table 6.5-1
Future Year (2035) Vehicle Trip Diversion – Travel from Merced HST Station

Destination Station	Daily Boarding Riders	% of Total	% Auto (Previous Mode)[a]	Daily Person Trips by Auto Removed (Inbound)	Daily Auto Trips Removed (Inbound)	Daily Auto Trips Removed (Both Directions)
San Francisco	1,760	23.2%	89%	1,558	1,053	2,105
Millbrae/SFO	70	0.9%	89%	62	42	84
Peninsula	190	2.5%	89%	168	113	227
San Jose	408	5.4%	89%	361	244	488
Gilroy	316	4.2%	96%	301	204	407
Fresno	418	5.5%	89%	370	250	499
Bakersfield	692	9.1%	89%	612	414	828

[3] Vehicle occupancy factor refers to average number of passengers in a vehicle

Destination Station	Daily Boarding Riders	% of Total	% Auto (Previous Mode)[a]	Daily Person Trips by Auto Removed (Inbound)	Daily Auto Trips Removed (Inbound)	Daily Auto Trips Removed (Both Directions)
Palmdale	573	7.5%	100%	573	387	775
Sylmar	433	5.7%	86%	372	252	503
Burbank	103	1.4%	86%	89	60	120
LA Union Station	378	5.0%	86%	325	220	440
Norwalk	307	4.0%	86%	264	179	357
Anaheim	1,951	25.7%	86%	1,678	1,134	2,267
Total	7,600	100.0%		6,375	4,550	9,101

[a] Average of business/commute and recreational travel

Source: AECOM calculations based on information provided by Authority, November 2010.

Table 6.5-2

Future Year (2035) Vehicle Trip Diversion – Travel from Fresno Station

Destination Station	Daily Boarding Riders	% of Total	% Auto (Previous Mode)[a]	Daily Person Trips by Auto Removed (Inbound)	Daily Auto Trips Removed (Inbound)	Daily Auto Trips Removed (Both Directions)
San Francisco	2,197	26.2%	89%	1,944	1,314	2,627
Millbrae/SFO	88	1.0%	89%	78	52	105
Peninsula	236	2.8%	89%	209	141	283
San Jose	510	6.1%	89%	451	305	610
Gilroy	394	4.7%	96%	377	255	509
Merced	538	6.4%	89%	476	322	643
Bakersfield	1,269	15.1%	89%	1,123	759	1,517
Palmdale	485	5.8%	100%	485	328	655
Sylmar	367	4.4%	86%	315	213	426
Burbank	86	1.0%	86%	74	50	100
LA Union Station	320	3.8%	86%	275	186	372
Norwalk	260	3.1%	86%	224	151	303
Anaheim	1,650	19.6%	86%	1,419	959	1,917
Total	8,400	100.0%		7,450	5,034	10,068

[a]Average of business/commute and recreational travel

Source: AECOM calculations based on information provided by the Authority, November 2010.

Because nearly all regional auto trips to Merced and Fresno stations use SR 99, screenlines were established at four locations in the study area along SR 99 to estimate the traffic removed on this freeway. The four screenlines cover the areas north of the Merced station, between the Merced station and SR 152, between SR 152 and Fresno, and the area south of the Fresno station. The screenline for the area north of the Merced station would include trips from San Francisco, Millbrae/SFO, and the Peninsula region to Merced or Fresno. As indicated in Tables 6.5-1 and 6.5-2, north of Merced would account for a total of approximately 5,100 trips per day as shown in Table 6.5-3. Likewise, auto trip reductions on SR 99 between Downtown Merced and SR 152, SR 152 and Downtown Fresno, and South of Downtown Fresno were calculated.

This combined reduction of auto trips from Merced and Fresno stations was estimated in terms of reduced ADT in 2035. This information is provided in Table 6.5-3. It can be noted from the table that the project would result in approximately 5% ADT reduction on SR 99 north of Merced and 7% reduction on SR 99 south of Fresno.

Table 6.5-3
Future Year (2035) Vehicle Trip Reductions by SR 99 Screenline

Segment	Average Daily Traffic (ADT) Removed (2035)	Percent Reduction in ADT (2035)
SR 99 (North of Merced)	5,148	5%
SR 99 (Merced to SR 152)	8,594	12%
SR 99 (SR 152 to Fresno)	9,995	8%
SR 99 (South of Fresno)	10,580	7%
Source: AECOM, based on statewide and local county travel demand models.		

The faster travel time provided by HST service will attract travelers making current freeway auto trips to and through the Merced to Fresno section. This will result in better performance of the freeway system, with fewer delays and reduced congestion. The reduction of vehicle trips would meet the purpose and need of the HST project. Hence, this would be a beneficial aspect of the project and is consistent with the goals set for the project.

6.5.1.2 Vehicles Miles Traveled

The statewide travel demand model provided an estimate of 2035 Statewide Daily Vehicles Miles Traveled for high-speed rail scenario. This information is presented for Merced, Madera, and Fresno counties in Table 6.5-4, along with VMT savings for all the three counties in the study area. VMT information was provided for the No Project and with project conditions, and the difference was calculated to estimate the VMT savings. A 7% overall reduction in VMT is projected for the three counties.

Table 6.5-4
Future Year (2035) Vehicle Miles Travelled (VMT)

County	No Project Condition			With Project Condition		
	Intra-regional Traffic	Inter-regional Traffic	Total Traffic	Intra-regional Traffic	Inter-regional Traffic	Total Traffic
Merced	4,172,211	9,362,159	13,534,370	4,172,210	8,319,344	12,491,554
Madera	4,120,611	4,411,941	8,532,552	4,120,611	4,178,644	8,299,255
Fresno	14,091,970	13,275,979	27,367,949	14,091,970	11,102,525	25,194,496
Total	22,384,792	27,050,079	49,434,871	22,384,791	23,600,513	45,985,305

Percent Change from No Project to With Project			
County	Intra-regional Traffic	Inter-regional Traffic	Total Traffic
Madera	0.00%	-11.10%	-7.70%
Fresno	0.00%	-5.30%	-2.70%
Total	0.00%	-16.40%	-7.90%

Source: AECOM calculations based on information provided by the Authority, November 2010.

6.5.1.3 Regional Bus Service

As with the Amtrak San Joaquin service, intercity bus service is likely to change as a result of the introduction of HST service. Many riders would switch to HST service, although the bus service's significantly lower pricing would help retain some riders. However, there would also be a new market providing feeder service to HST stations. The bus service providers (including Greyhound and Amtrak Thruway) would likely revise their current operation to better address this growing market of new transit riders. Because the future plans for the regional bus service are not defined, the project impacts were not analyzed.

6.5.1.4 Aviation System

The HST alternatives would also divert trips from air travel, primarily from FAT. The Statewide High-Speed Rail ridership model projected where trips would be diverted and whether the diversions would be from automobiles or airplane trips. An estimate of this diversion was prepared similar to the auto diversion discussed above and is presented in Table 6.5-5 for Merced Station and Table 6.5-6 for Fresno station.

Table 6.5-5
Future Year (2035) Air Trip Diversion – Merced Station

Destination Station	Daily Boarding Riders	% of Total	% Air (Previous Mode)[a]	Daily Person Trips by Air Removed (Inbound)	Daily Air Trips Removed (Round Trip)
San Francisco	1,760	23.2%	8%	141	282
Millbrae/SFO	70	0.9%	8%	6	11
Peninsula	190	2.5%	8%	15	30
San Jose	408	5.4%	8%	33	65
Gilroy	316	4.2%	0%	0	0
Fresno	418	5.5%	0%	0	0
Bakersfield	692	9.1%	0%	0	0
Palmdale	573	7.5%	0%	0	0
Sylmar	433	5.7%	6%	26	52
Burbank	103	1.4%	6%	6	12
LA Union Station	378	5.0%	6%	23	45
Norwalk	307	4.0%	6%	18	37
Anaheim	1,951	25.7%	6%	117	234
Total	7,600	100.0%		385	769

[a] Average of business/commute and recreational travel
Source: AECOM calculations based on information provided by the Authority, November 2010.

Table 6.5-6
Future Year (2035) Air Trip Diversion – Fresno Station

Destination Station	Daily Boarding Riders	% of Total	% Air (Previous Mode)[a]	Daily Person Trips by Air Removed (Inbound)	Daily Air Trips Removed (Round Trip)
San Francisco	2,197	26.2%	8%	176	352
Millbrae/SFO	88	1.0%	8%	7	14
Peninsula	236	2.8%	8%	19	38
San Jose	510	6.1%	8%	41	82
Gilroy	394	4.7%	0%	0	0
Fresno	538	6.4%	0%	0	0
Bakersfield	1,269	15.1%	0%	0	0
Palmdale	485	5.8%	0%	0	0

Destination Station	Daily Boarding Riders	% of Total	% Air (Previous Mode)[a]	Daily Person Trips by Air Removed (Inbound)	Daily Air Trips Removed (Round Trip)
Sylmar	367	4.4%	6%	22	44
Burbank	86	1.0%	6%	5	10
LA Union Station	320	3.8%	6%	19	38
Norwalk	260	3.1%	6%	16	31
Anaheim	1,650	19.6%	6%	99	198
Total	8,400	100.0%		403	807

[a] Average of business/commute and recreational travel

Source: AECOM calculations based on information provided by the Authority, November 2010.

It can be noted from the tables above that approximately 1,600 daily round trips by air from Merced and Fresno airports are diverted to high-speed rail, which would account to approximately 472,880 annual round trips. According to the Federal Aviation Administration (FAA), the projected total annual air round trips for FAT are estimated at 1,704,000 in 2025. Based on expected population growth, air trips could increase to 2,044,800 trips in future year 2035. The HST project would result in a projected reduction of 23% of the future air trips. The reduction of air travel would meet the purpose and need of the HST project. Hence this would be a beneficial aspect of the project and is consistent with the goals set for the project.

6.5.1.5 Conventional Passenger Rail

With the introduction of HST service, the existing parallel rail service provided by Amtrak's San Joaquin may be adjusted. Since the San Joaquin stops at more stations, it is assumed it would continue service all the way to Bakersfield and, as a feeder service to the Phase 1 HST system, the San Joaquin would become increasingly important in its support of new riders. Even as feeder service may have increased ridership in select segments, some of the existing riders would shift to HST service as it becomes available (e.g., Bay Area to Fresno trips). Because the future plans for conventional passenger rail are not defined to the extent of analyzing impacts, the project impacts were not analyzed.

6.5.1.6 Freight Rail

As the HST alternatives do not encroach on the freight rail corridors, they would not have a direct effect on freight operations. All freight operations would continue as they currently do after construction and vehicle miles would change in accordance with service plans of the UPRR and BNSF. No effects on freight rail operations are anticipated.

The freight railroads would also benefit from planned grade separations in several locations, depending on which alternative is selected. These improvements would enhance the speed, reliability, and capacity of the rail corridor.

6.5.1.7 Pedestrian and Bicycle

Regional pedestrian and bicycle usage is largely concentrated in the urban areas along the corridor. Impacts in the Merced and Fresno station areas are discussed in the station sections below. In other urban areas such as Downtown Madera, HST is proposed to operate on an elevated structure that would not restrict pedestrian and bicycle movement. The HST project would also include grade-separated roadways throughout the corridor (including new freight rail separations) and these separations would improve pedestrian and bicycle safety, which would be beneficial under NEPA and a less than significant impact under CEQA.

6.5.2 Changes to the Vehicle Movements and Flow on Highways and Roadways

All alternatives would result in impacts on highways and roadways between Merced and Fresno. The impacts include crossing over or shifting existing roads, road closures, and freeway operations.

6.5.2.1 All HST Alternatives

Appendix A presents the details on changes that would take place at each roadway crossed by the proposed HST alignments. Roadway impacts are common for all alternatives in the Merced area (from the Merced station to north of Mission Avenue) and in the Fresno area south of the San Joaquin River. The common HST alignment extends south of the Merced station in an at-grade configuration. Gerard Avenue would be closed at the existing crossing of UPRR, which connects to the Caltrans frontage road. This closure would result in a minor diversion of traffic to the Mission Avenue/SR 99 interchange.

There are also common impacts for the station areas (Merced and Fresno) and in Fresno (Carnegie Avenue closure, SR 99 realignment and roadway modifications between McKinley Avenue and SR 180). Roadway modification impacts between Herndon and Shaw Avenues are presented in Section 6.6, SR 99 realignment impacts are presented in Section 6.7, roadway modification impacts between McKinley Avenue and SR 180 are presented in Section 6.8, Merced station impacts are presented in Section 6.9, and Fresno station impacts are presented in Section 6.10.

6.5.2.2 UPRR/SR 99 Alternative

From the common alignment in Downtown Merced area, the UPRR/SR 99 Alternative alignment would continue to be at-grade south of Merced. In conjunction with the Caltrans-planned SR 99 – Arboleda Drive/Le Grand Road interchange, the HST alignment would restrict access at Lingard Road to the planned Caltrans frontage road. Existing SR 99 crossings at Le Grand Road and Arboleda Drive would be replaced by a new interchange and the proposed Arboleda overcrossing would be extended to cross the UPRR/HST alignment.

In conjunction with the Caltrans-planned SR 99 - Plainsburg Road interchange, the HST alignment would restrict access at Athlone Road to the proposed Caltrans frontage road. Existing SR 99 and UPRR crossings at Sandy Mush Road and Plainsburg Road would be replaced by a new interchange and the proposed Sandy Mush/Plainsburg overcrossing would be extended to cross the UPRR/HST alignment.

Continuing into Madera County, the alignment would become elevated through the City of Chowchilla and continue on an elevated structure through Madera before returning to grade north of Avenue 11. The alignment would return to an elevated structure to cross over the San Joaquin River on the common alignment discussed previously.

The north-south alignment of the Merced to Fresno Section would connect to the west to reach the Bay Area. Two design options are being considered for this wye connection, one along Avenue 24 and a second along Avenue 21.

Along the HST alignment, a number of local roads would be closed and traffic diverted to adjacent roads as discussed above. In the Merced and Chowchilla areas along SR 99, the following existing crossings of UPRR and connections to SR 99 would be closed:

- Healy Road
- Mariposa Avenue
- Lingard Road
- Athlone Road

With the closure of these crossings, traffic currently accessing SR 99 or areas to the east of SR 99 would be required to travel to the nearest interchanges at Mission Boulevard or Sandy Mush Road/Plainsburg Road. The diverted travel/traffic would not adversely affect segments and intersections that would receive the traffic, but there may be potential impacts associated with property access as a result of these closures depending on the availability of alternative access routes. Because of potential property access issues, the road closure impacts are considered to be moderate under NEPA and significant under CEQA.

In the Chowchilla and Madera areas, the alignment is generally elevated. Therefore, no road closures are proposed.

There would also be road closures associated with the wye design options. For the UPRR/SR 99 Alternative, the following road closures are currently proposed, depending on which wye design option is selected:

- Road 11 (north leg of Ave 24 Wye)
- Avenue 24½ (north leg of Ave 24 Wye)
- Road 12 (north leg of Ave 24 Wye)
- Road 12 (south leg of Ave 24 Wye)
- Road 14 (south leg of Ave 24 Wye)
- Railroad Drive (south leg of Ave 24 Wye)
- Road 15¾ (south leg of Ave 24 Wye)
- Road 16½ (south leg of Ave 24 Wye)
- Road 17 (south leg of Ave 24 Wye)
- Road 17½ (south leg of Ave 24 Wye)
- Road 8 (Ave 21 Wye)
- Road 10 (Ave 21 Wye)
- Railroad Avenue (Ave 21 Wye)
- Road 15 (Ave 21 Wye)
- Road 15½ (Ave 21 Wye)
- Road 16½ (Ave 21 Wye)
- Road 17 (Ave 21 Wye)
- Road18 (north leg of Ave 21 Wye)
- Road 18½ (Ave 21 Wye)
- Avenue 22½ (north leg of Ave 21 Wye)
- Road 18 (south leg of Ave 21 Wye)
- Road 18½ near Road 19 (south leg of Ave 21 Wye)
- Avenue 21 near Road 19 (south leg of Ave 21 Wye)
- Road 19½ (south leg of Ave 21 Wye)
- Road 20½ (south leg of Ave 21 Wye)

The UPRR/SR 99 Alternative includes the Merced and Fresno stations and the SR 99 relocation in Fresno, the impacts of which are discussed in Sections 6.7 through 6.8 below. Appendix A lists road closures currently planned. Based on existing field traffic counts of similar roadways and information from local agencies, the traffic volumes on these local roads shown in Appendix A are generally less than 500 vehicles per day. Therefore, limited traffic (LOS) impacts are expected as a result of the closures and diversion of traffic. There may be potential impacts associated with access to individual properties as a result of these closures depending on the availability of alternative access routes. Due to potential property access issues, the road closure impacts are considered to be moderate under NEPA and potentially significant under CEQA.

6.5.2.3 BNSF Alternative

The BNSF Alternative would follow the common alignment through the Merced station area. The alignment would then shift to the BNSF corridor through southern Merced County and Madera County, generally in an at-grade configuration, before returning to the common alignment entering Fresno County. The BNSF Alternative includes the Merced and Fresno stations, roadway modifications between Herndon and Shaw Avenues, roadway modifications between McKinley Avenue and SR 180, and the

SR 99 relocation in Fresno, the impacts of which are discussed in the Sections 6.6 through 6.10. See Appendix A for the details of road closures currently planned for the BNSF Alternative.

In the Merced, Chowchilla, and Madera areas, the following existing crossings would be closed with the BNSF Alternative:

- Miles Road (Mission Ave design option)
- Vassar Avenue (Mariposa Way design option)
- McHenry Road (Mariposa Way design option)
- South Tower Road (Mariposa Way design option)
- Orchard Drive at Mariposa Way (Mariposa Way design option)
- Ranch Road (Mission Ave and Mariposa Way design options)
- Whealan Road at Mariposa Way (Mission Ave and Mariposa Way design option)
- Morley Avenue (Mission Ave and Mariposa Way design options)
- Mariposa Way (Mariposa Way design option)
- Banks Road (Mission Ave and Mariposa Way design options)
- Cunningham Road at Santa Fe (Le Grand design options)
- Ipsen Avenue/Wade Avenue (Le Grand and East of Le Grand design options)
- White Rock Road near Buchanan Hollow Road (Le Grand design option)
- Buchanan Hollow Road near White Rock Road (East of Le Grand design option)
- Road 22
- Avenue 22
- Avenue 20
- Road 28¼ near SR 145
- Watson Street near SR 145
- Avenue 15¾

There would also be road closures associated with the wye design options. For the BNSF Alternative, the following road closures are currently proposed, depending on which wye design option is selected:

- Road 11 (Ave 24 Wye)
- Road 12 (Ave 24 Wye)
- Road 14 (Ave 24 Wye)
- Railroad Drive (Ave 24 Wye)
- Road 15¾ (Ave 24 Wye)
- Road 16½ (Ave 24 Wye)
- Road 17 (Ave 24 Wye)
- Road 18¾ (Ave 24 Wye)
- Road 19 (Ave 24 Wye)
- Road 19½ (Ave 24 Wye)
- Road 20 (Ave 24 Wye)
- Avenue 25 (north leg of Ave 24 Wye)
- Road 19 (south leg of Ave 24 Wye)
- Road 19½ (south leg of Ave 24 Wye)
- Road 20 (south leg of Ave 24 Wye)
- Road 20½ (south leg of Ave 24 Wye)
- Avenue 22½ (south leg of Ave 24 Wye)
- Road 8 (Ave 21 Wye)
- Road 10 (Ave 21 Wye)
- Railroad Avenue (Ave 21 Wye)
- Road 15 (Ave 21 Wye)
- Road 15½ (Ave 21 Wye)
- Road 17 (Ave 21 Wye)
- Road 18 (Ave 21 Wye)

- Road 19 (Ave 21 Wye)
- Road 19½ (Ave 21 Wye)
- Road 21 (Ave 21 Wye)
- Road 23 (north leg of Ave 21 Wye)
- Avenue 21 (south leg of Ave 21 Wye)
- Road 24 (south leg of Ave 21 Wye)

Based on existing field traffic counts of similar roadways and information from local agencies, the traffic volumes on these local roads is generally less than 500 vehicles per day. Therefore, limited traffic impacts are expected as a result of the closures and diversion of traffic. There may be potential impacts associated with access to individual properties as a result of these closures depending on the availability of alternative access routes. Due to potential property access issues, the road closure impacts are considered to be moderate under NEPA and significant under CEQA.

6.5.2.4 Hybrid Alternative

The Hybrid Alternative includes the impacts associated with the Merced and Fresno stations, roadway modifications between Herndon and Shaw Avenues, roadway modifications between McKinley Avenue and SR 180, and the SR 99 relocation in Fresno, the impacts of which are discussed in Sections 6.6 through 6.10, as well as the common alignment impacts discussed previously. See Appendix A for the road closures currently planned for the Hybrid Alternative.

From the common alignment in Downtown Merced, the Hybrid Alternative alignment would continue at-grade south of Merced, along the west side of SR 99. In conjunction with the Caltrans-planned SR 99–Arboleda Drive/Le Grand Road interchange, the HST alignment would restrict access at Lingard Road to the planned Caltrans frontage road. Existing SR 99 crossings at Le Grand Road and Arboleda Drive would be replaced by a new interchange and the proposed Arboleda overcrossing would be extended to cross the UPRR/HST alignment.

In conjunction with the Caltrans-planned SR 99-Plainsburg Road interchange, the HST alignment would restrict access at Athlone Road to the proposed Caltrans frontage road. Existing SR 99 and UPRR crossings at Sandy Mush Road and Plainsburg Road would be replaced by a new interchange and the proposed Sandy Mush/Plainsburg overcrossing would be extended to cross the UPRR/HST alignment.

South of the planned Plainsburg Road interchange, there are two options for the Hybrid Alternative. One option would follow the proposed West Chowchilla design option and the Ave 24 Wye through the Chowchilla area, generally in an at-grade configuration. It would continue at-grade through the Madera area before returning to the common alignment entering Fresno County.

The second option would continue along the same alignment as the UPRR/SR 99 Alternative through Chowchilla before connecting to the East Chowchilla design option and the Ave 21 Wye alignment near SR 99. It would then continue along the Ave 21 Wye joining the BNSF Alternative alignment through the Madera area before returning to the common alignment entering Fresno County.

Road Closures - Along the HST alignment, a number of local roads would be closed and traffic diverted to adjacent roads. In the Merced and Chowchilla areas along SR 99, the following existing crossings of UPRR and connections to SR 99 would be closed (same as the UPRR/SR 99 Alternative):

- Healy Road
- Mariposa Avenue
- Lingard Road
- Athlone Road

With the closure of these crossings, traffic currently accessing SR 99 or areas to the east of SR 99 would be required to travel to the nearest interchanges at Mission Boulevard or Sandy Mush Road/Plainsburg Road. The diverted travel/traffic would not adversely affect segments and intersections that would receive the traffic, but there may be potential impacts associated with property access as a result of these closures depending on the availability of alternative access routes. Because of potential property access issues, the road closure impacts are considered to be moderate under NEPA and significant under CEQA.

In the Chowchilla and Madera areas, the following existing crossings would be closed with the Hybrid Alternative:

- Avenue 25 (West Chowchilla design option)
- Road 14 near Avenue 24 (West Chowchilla design option)
- Railroad Drive (West Chowchilla design option)
- Road 15¾ near Avenue 24 (West Chowchilla design option)
- Road 16½ near Avenue 24 (West Chowchilla design option)
- Road 17 near Avenue 24 (West Chowchilla design option)
- Road 18¾ near Avenue 24 (West Chowchilla design option)
- Road 19 south of Avenue 24 (West Chowchilla design option)
- Road 19½ south of Avenue 24 (West Chowchilla design option)
- Road 20 south of Avenue 24 (West Chowchilla design option)
- Road 20½ south of Avenue 24 (West Chowchilla design option)
- Avenue 22½ south of Avenue 24 (West Chowchilla design option)
- Road 21 (East Chowchilla design option)
- Avenue 21 (East Chowchilla design option)
- Avenue 20½ (East Chowchilla design option)
- Road 25 (East Chowchilla design option)
- Road 28¼ near SR 145 (both design options)
- Watson Street near SR 145 (both design options)
- Avenue 15¾ (both design options)

There would also be road closures associated with the wye design option. For the Hybrid Alternative, the following road closures are currently proposed, depending on which wye design option is selected:

- Road 11 (north leg of Ave 24 Wye)
- Avenue 25 (Ave 24 Wye)
- Road 12 (north leg of Ave 24 Wye)
- Road 12 (south leg of Ave 24 Wye)
- Road 8 (Ave 21 Wye)
- Road 10 (Ave 21 Wye)
- Railroad Avenue / Avenue 21 (Ave 21 Wye)
- Road 15 (Ave 21 Wye)
- Road 15½ (Ave 21 Wye)
- Road 16½ (Ave 21 Wye)
- Road 17 (Ave 21 Wye)
- Road 18 (north leg of Ave 21 Wye)
- Road 18½ (north leg of Ave 21 Wye)
- Road 22½ (north leg of Ave 21 Wye)
- Road 18 (south leg of Ave 21 Wye)
- Road 19 (south leg of Ave 21 Wye)
- Road 19½ (south leg of Ave 21 Wye)

Based on existing field traffic counts of similar roadways and information from local agencies, the traffic volumes on these local roads is generally less than 500 vehicle per day. Therefore, limited traffic impacts are expected as a result of the closures and diversion of traffic. There may be potential impacts associated with access to individual properties as a result of these closures depending on the availability of alternative access routes. Due to potential property access issues, the road closure impacts are considered to be moderate under NEPA and significant under CEQA.

6.6 Fresno Analysis between Herndon and Shaw Avenues

In Fresno County, the HST alignment would be on an elevated structure to cross the San Joaquin River, the UPRR corridor, and W Herndon Avenue, returning to an at-grade configuration south of Herndon and remaining at-grade to the Fresno Station. In this area, N Golden State Boulevard would be shifted to the west to accommodate the HST alignment.

The HST alignment would pass under the planned Veterans Boulevard extension and overcrossing. South of Veterans Boulevard, an existing road connection to Golden State Boulevard and crossing of UPRR at N Carnegie Avenue would be closed. In conjunction with the HST project, an initial phase of the Veterans Boulevard project would be constructed between the realigned Golden State Boulevard and W Bullard Avenue, including an overcrossing of HST and UPRR. This connection would provide an alternative access route for the closure of Carnegie Avenue. The complete Veterans Boulevard extension is assumed to be in place in 2035 and is a component of the No Project condition.

At W Shaw Avenue, a new overcrossing would be constructed to carry traffic over the HST and UPRR corridors. New roadway connections to Golden State Boulevard from Shaw Avenue would be provided. These roadway modifications are presented in Figure 6.6-1. Because of these roadway modifications in this area, traffic currently using the intersections of Golden State Boulevard/Carnegie Avenue and Golden State Boulevard/Shaw Avenue is redistributed to the nearby roadways and intersections. This section further presents the analysis for existing and future project conditions for both roadways and intersections and identifies project impacts, if any.

6.6.1 Roadway Impacts

6.6.1.1 Existing Plus Project Conditions

Based on the redistributed traffic for the existing plus project conditions, roadway analysis was performed. The result of the roadway analysis is presented in Table 6.6-1 and compared against existing conditions. Impacts on roadway segments were identified based on the traffic impact criteria presented in Section 3.3.4. Table 6.6-1 shows these impacts. LOS calculation sheets are provided in Appendix C. As indicated in the table, none of the analyzed roadway segments are impacted under this scenario.

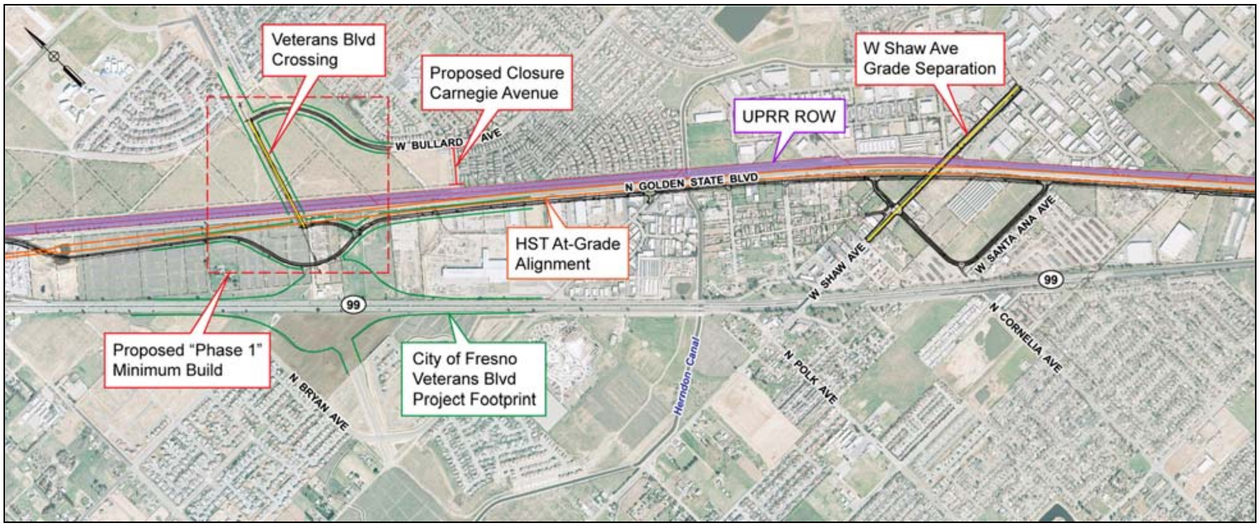


Figure 6.6-1
Golden State Boulevard Realignment
(Between Veterans Boulevard and W Shaw Avenue)

Table 6.6-1
Existing with Project Roadway Segment Analysis – Between Herndon and Shaw Avenues

No.	Roadway Segment	# of Lanes	Existing ADT	Existing LOS	Existing plus HST ADT	Existing plus HST LOS	Impact
1	Golden State Blvd north of Carnegie Ave	2	3,614	A	6,629	B	No
2	Bullard Ave between Polk Ave and Dante Ave	2	7,238	A	7,095	A	No
3	Gates Ave between Figarden Dr and Shaw Ave	2	11,790	A	11,973	B	No
4	Shaw Ave between Brawley Ave and Golden State Blvd	2	2,9871	D	30,054	D	No
5	Veterans Blvd between Golden State Blvd and Bullard Ave[a]	2	N/A	N/A	2,795	A	No

Notes:
[a] Roadway exists only under Project conditions.

6.6.1.2 Future Year (2035) Plus Project Conditions

Based on the redistributed traffic for the future plus project conditions, roadway analysis was performed. The result of the roadway analysis is presented in Table 6.6-2 and compared against the future year (2035) No Project conditions. Impacts on roadway segments were identified based on the traffic impact criteria presented in Section 3.3.4. These impacts are shown in Table 6.6-2. LOS calculation sheets are provided in Appendix C. As indicated in the table, roadway segment on Veterans Boulevard between Golden State Boulevard and Bullard Avenue would be impacted with the addition of project traffic. The volume-to-capacity ratio on this segment increases by more than 0.04 compared to the future year (2035) No Project conditions. Because traffic in this area would experience an unacceptable increase in traffic, the impact would be significant under CEQA and substantial under NEPA.

Table 6.6-2
Future Year (2035) with Project Roadway Segment Analysis –
Between Herndon and Shaw Avenues

No.	Roadway Segment	# of Lanes	2035 No Project ADT	2035 No Project LOS	2035 plus HST ADT	2035 plus HST LOS	Impact
1	Golden State Blvd north of Carnegie Ave	4	21,210	B	23,845	C	No
2	Bullard Ave between Polk Ave and Dante Ave	4	16,620	C	16,228	C	No
3	Gates Ave between Figarden Dr and Shaw Ave	4	14,595	B	14,908	B	No
4	Shaw Ave between Brawley Ave and Golden State Blvd	5	57,305	F	57,618	F	No
5	Veterans Blvd between Golden State Blvd and Bullard Ave[a]	6	70,090	F	75,506	F	Yes

Notes:
Impact locations are highlighted.

6.6.2 Intersection Impacts

6.6.2.1 Existing Plus Project Conditions

Because of the aforementioned roadway modifications on Golden State Boulevard and Veterans Boulevard, the intersection of Golden State Boulevard and Veterans Boulevard is analyzed under this project conditions. Because of the Carnegie Avenue closure, the Carnegie Avenue intersection with Golden State Boulevard is studied as a T-intersection with a driveway on the west approach. The intersection of Golden State Boulevard at Shaw Avenue would not exist under project conditions and therefore was not analyzed under this scenario.

Based on the redistributed traffic for the existing plus project conditions, intersection volumes for the existing plus project conditions were developed. These volumes are presented in Figure 6.6-2.

Intersection analysis was performed for AM and PM peak hours and result of the analysis is presented in Table 6.6-3 and compared against the existing conditions. LOS calculation sheets are provided in Appendix C. Impacted intersections were identified, based on the traffic impact criteria presented in Section 3.3.4. These impacts are shown in Table 6.6-3. It can be noted from the table that one intersection (Intersection 3, Cornelia Avenue and Shaw Avenue) would be impacted under AM peak and two intersections (Intersection 9, Figarden Drive and Bullard Avenue, in addition to Intersection 3) under PM peak conditions. Because traffic at three intersections in this area would increase to LOS D or worse, the impact would be significant under CEQA and substantial under NEPA.

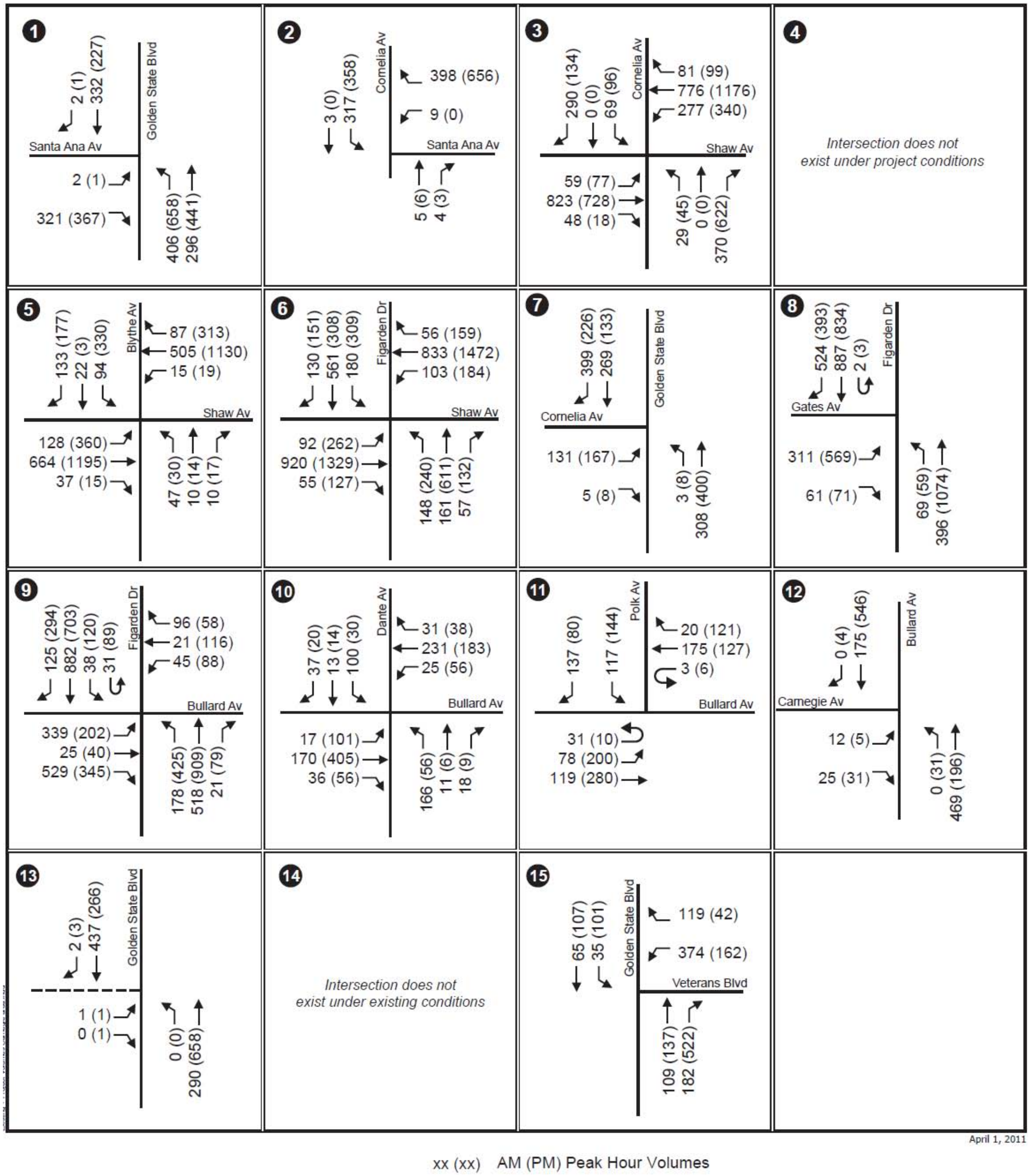


Figure 6.6-2
Existing with Project Intersection Volumes –
Between Herndon and Shaw Avenues

Table 6.6-3
Existing with Project Intersection Operating Conditions – Between Herndon and Shaw Avenues

		AM Peak Hour					PM Peak Hour				
		Existing		Existing plus HST			Existing		Existing plus HST		
	Intersection	LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
1	Golden State Blvd/Santa Ana Ave	C	18.8	C	16.8	No	C	16.2	C	15.8	No
2	Cornelia Ave/Santa Ana Ave	A	7.0	B	12.6	No	A	6.8	D	28.9	No
3	Cornelia Ave/Shaw Ave	E	36.4	F	OVFL	Yes	E	44.9	F	OVFL	Yes
4	Golden State Blvd/Shaw Ave	D	43.8	NA	NA	No	E	76.9	NA	NA	No
5	Blythe Ave/Shaw Ave	D	36.4	D	37.0	No	F	>80	E	69.8	No
6	Brawley Ave/Shaw Ave	D	38.9	D	38.9	No	E	64.5	E	67.8	No
7	Cornelia Ave/Golden State Blvd	C	18.5	C	18.2	No	D	30.9	C	19.1	No
8	Figarden Dr/Gates Ave	B	15.8	B	16.1	No	C	21.2	D	44.9	No
9	Figarden Dr/Bullard Ave	D	45.6	D	52.3	No	D	43.0	F	>80	Yes
10	Dante Ave/Bullard Ave	B	10.9	B	10.6	No	B	10.6	B	10.3	No
11	Polk Ave/Bullard Ave	B	10.9	A	9.6	No	B	11.7	B	11.0	No
12	Carnegie Ave/Bullard Ave	C	16.8	B	10.4	No	C	21.7	B	10.4	No
13	Golden State Blvd/West Driveway at Carnegie	E	45.7	C	16.1	No	C	23.3	B	14.7	No
15	Veterans Blvd/Golden State Blvd	NA	NA	D	30.3	No	NA	NA	D	29.9	No

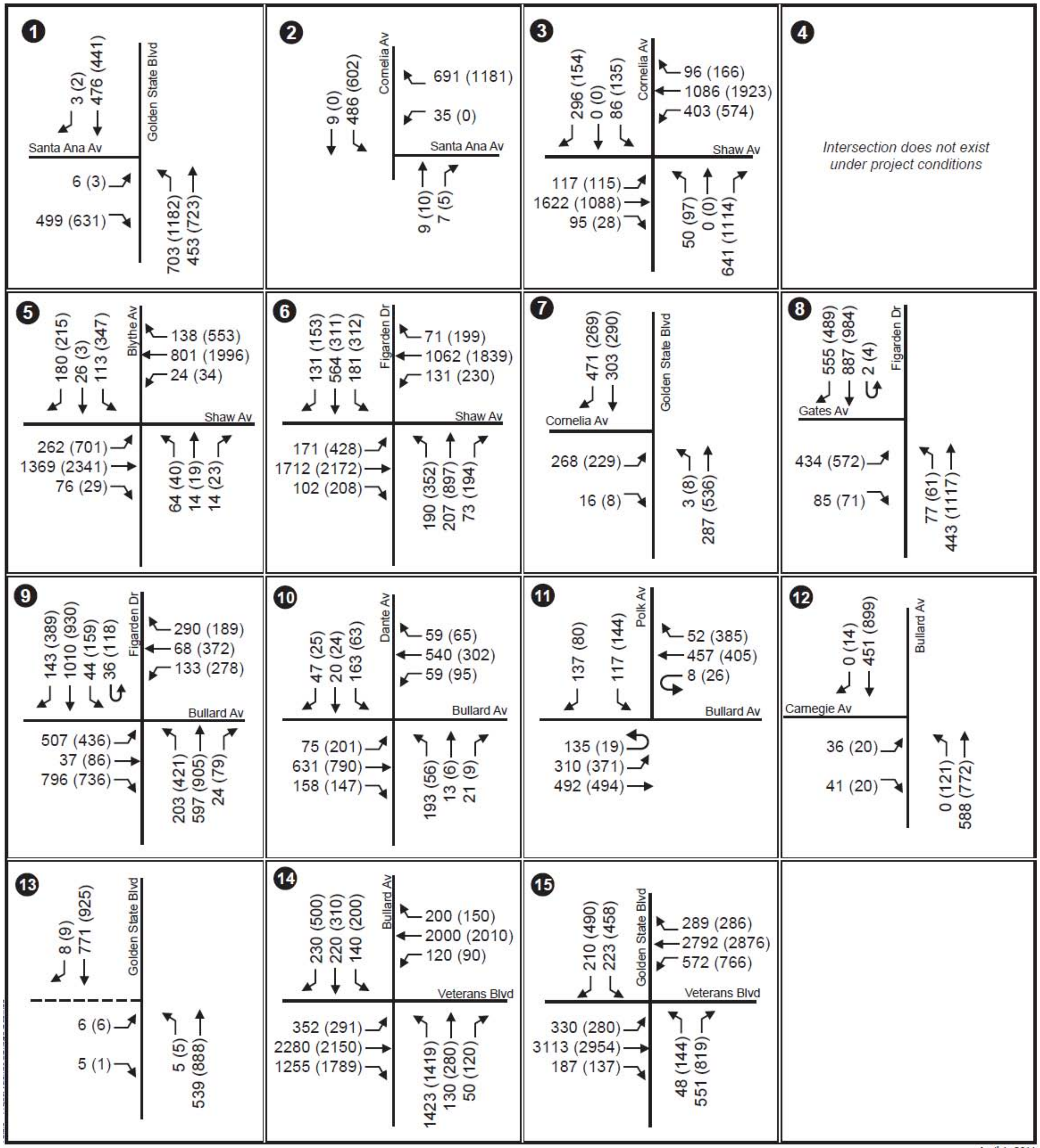
Notes:
OVFL = Overflow
Intersection 4 does not exist under Project conditions.
Intersection 14 exists under future conditions.
Impact locations are highlighted.

6.6.2.2 Future Year (2035) Plus Project Conditions

Because of the aforementioned roadway modifications at Carnegie Avenue, Golden State Boulevard/Shaw Avenue intersections, and construction of Veterans Boulevard, the intersections of Veterans Boulevard/Bullard Avenue and Golden State Boulevard/Veterans Boulevard are analyzed under this scenario. Because of the Carnegie Avenue closure, the Carnegie Avenue intersection with Golden State Boulevard is studied as a T-intersection with a driveway on the west approach. The intersection of Golden State Boulevard at Shaw Avenue would not exist under project conditions and is therefore not analyzed under this scenario.

Based on the redistributed traffic for the future plus project conditions, intersection volumes for the future plus project conditions were developed. These volumes are presented in Figure 6.6-3.

Intersection analysis was performed for AM and PM peak hours and result of the analysis is presented in Table 6.6-4 and compared against the future year (2035) No Project conditions. LOS calculation sheets are provided in Appendix C. Impacted intersections were identified, based on the traffic impact criteria presented in Section 3.3.4. These impacts are shown in Table 6.6-4. As indicated in the table, eight intersections (1, 2, 3, 5, 7, 9, 14, and 15) are impacted under this scenario during AM and/or PM peak hours. Because traffic at eight intersections in this area would experience an unacceptable increase in traffic, the impact would be significant under CEQA and substantial under NEPA.



xx (xx) AM (PM) Peak Hour Volumes

Figure 6.6-3
Future Year (2035) with Project Intersection Volumes – Between Herndon and Shaw Avenues

Table 6.6-4
Future Year (2035) with Project Intersection Operating Conditions – Between Herndon and Shaw Avenues

		AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 plus HST			2035 No Project		2035 plus HST		
	Intersection	LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
1	Golden State Blvd/Santa Ana Ave	E	48.2	F	>50	Yes	F	>50	F	OVFL	Yes
2	Cornelia Ave/Santa Ana Ave	A	7.2	F	>50	Yes	A	6.8	F	>50	Yes
3	Cornelia Ave/Shaw Ave	F	>50	F	OVFL	Yes	F	>50	F	OVFL	Yes
4	Golden State Blvd/Shaw Ave	E	75.9	NA	NA	No	F	>80	NA	NA	No
5	Blythe Ave/Shaw Ave	E	55.2	E	56.8	No	F	>80	F	>80	Yes
6	Brawley Ave/Shaw Ave	D	44.5	D	44.5	No	F	>80	F	>80	No
7	Cornelia Ave/Golden State Blvd	E	40.6	E	35.2	No	F	>50	F	>50	Yes
8	Figarden Dr/Gates Ave	B	18.9	B	19.8	No	C	21.2	C	34.2	No
9	Figarden Dr/Bullard Ave	F	>80	F	>80	Yes	F	>80	F	>80	Yes
10	Dante Ave/Bullard Ave	D	25.6	D	26.8	No	C	17.5	C	17.9	No
11	Polk Ave/Bullard Ave	E	36.6	D	34.5	No	D	31.1	D	28.3	No
12	Carnegie Ave/Bullard Ave	E	44.4	C	22.2	No	F	>50	F	>50	No
13	Golden State Blvd/West Driveway at Carnegie	F	>50	D	25.1	No	F	>50	F	>50	No
14	Veterans Blvd/Bullard Ave	E	74.1	F	>80	Yes	E	72.4	F	>80	Yes
15	Veterans Blvd/Golden State Blvd	C	27.3	F	>80	Yes	E	80.0	F	>80	Yes

Notes:
OVFL = Overflow
Intersection 4 does not exist under Project conditions.
Impacted locations are highlighted.

6.7 Realignment of SR 99 between Clinton Avenue and Ashlan Avenue — All Alternatives (Post-realignment)

Between Ashlan and Clinton Avenues, the HST alignment would be accommodated on existing Caltrans right-of-way by shifting SR 99 approximately 80 feet to the west. This shift would require the reconfiguration of the interchange ramps at Ashlan and Clinton avenues and the closure of the existing southbound on- and off-ramps at Dakota, Shields, and Princeton avenues. These changes and the ramp closures would result in a redistribution of traffic in Fresno west of SR 99.

Options for geometric improvements in this segment have been studied; the current design concept is known as Alternative 6B. These improvement plans are illustrated in Figure 6.7-1. Figure 6.7-2 shows the proposed diversion routes because of the above mentioned improvements.

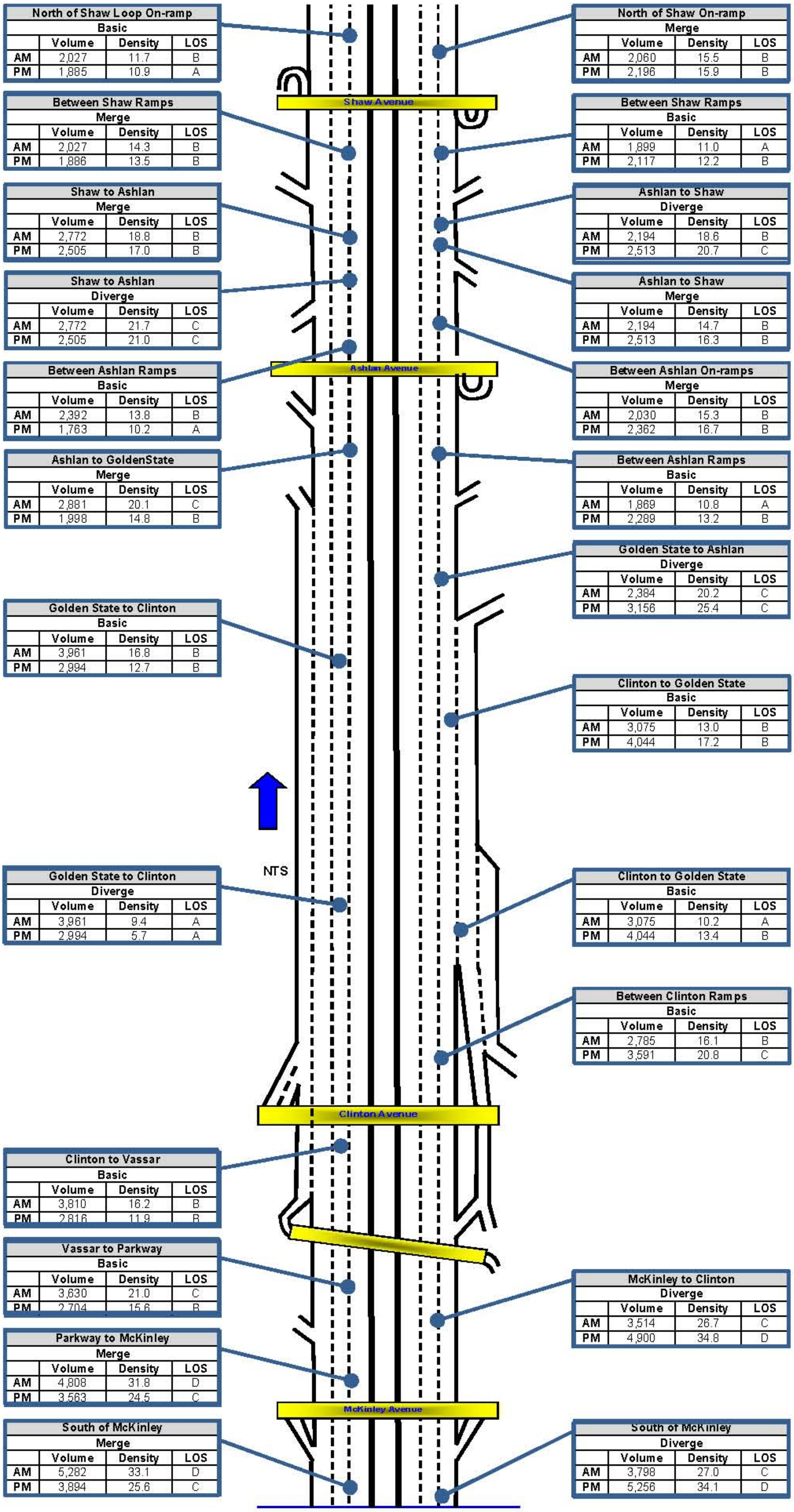
6.7.1 Freeway Impacts

6.7.1.1 Existing Plus Project Conditions

Figure 6.7-3 provides summary of the freeway volume, density (pc/mi/ln), and LOS along SR 99 during the AM and PM peak hours for the existing with project scenario. Each freeway study segment is also labeled with the type of HCM analysis method performed (i.e., basic, merge/diverge, weaving). A complete set of HCM output files are provided in Appendix E.

Figure 6.7-1
Preliminary Plan – Proposed SR 99 Realignment

Figure 6.7-2
Freeway Trip Redistribution – SR 99 Realignment



North of Shaw Loop On-ramp			
Basic			
	Volume	Density	LOS
AM	2,027	11.7	B
PM	1,885	10.9	A

Between Shaw Ramps			
Merge			
	Volume	Density	LOS
AM	2,027	14.3	B
PM	1,886	13.5	B

Shaw to Ashlan			
Merge			
	Volume	Density	LOS
AM	2,772	18.8	B
PM	2,505	17.0	B

Shaw to Ashlan			
Diverge			
	Volume	Density	LOS
AM	2,772	21.7	C
PM	2,505	21.0	C

Between Ashlan Ramps			
Basic			
	Volume	Density	LOS
AM	2,392	13.8	B
PM	1,763	10.2	A

Ashlan to GoldenState			
Merge			
	Volume	Density	LOS
AM	2,881	20.1	C
PM	1,998	14.8	B

Golden State to Clinton			
Basic			
	Volume	Density	LOS
AM	3,961	16.8	B
PM	2,994	12.7	B

Golden State to Clinton			
Diverge			
	Volume	Density	LOS
AM	3,961	9.4	A
PM	2,994	5.7	A

Clinton to Vassar			
Basic			
	Volume	Density	LOS
AM	3,810	16.2	B
PM	2,816	11.9	B

Vassar to Parkway			
Basic			
	Volume	Density	LOS
AM	3,630	21.0	C
PM	2,704	15.6	B

Parkway to McKinley			
Merge			
	Volume	Density	LOS
AM	4,808	31.8	D
PM	3,563	24.5	C

South of McKinley			
Merge			
	Volume	Density	LOS
AM	5,282	33.1	D
PM	3,894	25.6	C

North of Shaw On-ramp			
Merge			
	Volume	Density	LOS
AM	2,060	15.5	B
PM	2,196	15.9	B

Between Shaw Ramps			
Basic			
	Volume	Density	LOS
AM	1,899	11.0	A
PM	2,117	12.2	B

Ashlan to Shaw			
Diverge			
	Volume	Density	LOS
AM	2,194	18.6	B
PM	2,513	20.7	C

Ashlan to Shaw			
Merge			
	Volume	Density	LOS
AM	2,194	14.7	B
PM	2,513	16.3	B

Between Ashlan On-ramps			
Merge			
	Volume	Density	LOS
AM	2,030	15.3	B
PM	2,362	16.7	B

Between Ashlan Ramps			
Basic			
	Volume	Density	LOS
AM	1,869	10.8	A
PM	2,289	13.2	B

Golden State to Ashlan			
Diverge			
	Volume	Density	LOS
AM	2,384	20.2	C
PM	3,156	25.4	C

Clinton to Golden State			
Basic			
	Volume	Density	LOS
AM	3,075	13.0	B
PM	4,044	17.2	B

Clinton to Golden State			
Basic			
	Volume	Density	LOS
AM	3,075	10.2	A
PM	4,044	13.4	B

Between Clinton Ramps			
Basic			
	Volume	Density	LOS
AM	2,785	16.1	B
PM	3,591	20.8	C

McKinley to Clinton			
Diverge			
	Volume	Density	LOS
AM	3,514	26.7	C
PM	4,900	34.8	D

South of McKinley			
Diverge			
	Volume	Density	LOS
AM	3,798	27.0	C
PM	5,256	34.1	D

Figure 6.7-3
Existing with Project Freeway Operation Summary – Proposed SR 99 Realignment

Based on the Authority's impact criterion (where the addition of project-related traffic results in a change from LOS D or better to LOS E or worse) there would be no freeway related impacts in the existing with project condition.

For northbound SR 99, operations for the existing with project conditions south of Ashlan Avenue are the same or better than the existing condition. North of Ashlan Avenue, operations for the existing and existing with project scenario are the same, as the mainline improvements end south of Ashlan Avenue.

For southbound SR 99 north of Ashlan Avenue, operations for the existing and existing with project option are the same, as the mainline improvements end south of Ashlan Avenue. Operations from Ashlan Avenue to Clinton Avenue improve under with project conditions due to the addition of the auxiliary lane and the elimination of several southbound ramps. Overall, the peak period LOS improves from approximately LOS D in the existing scenario to LOS B in the existing with project scenario. Because there would be no freeway-related impacts with the project traffic under existing conditions, this is considered a negligible impact under NEPA and a less than significant impact under CEQA.

6.7.1.2 Future year (2035) plus project conditions

Figure 6.7-4 provides summary of the freeway volume, density (pc/mi/ln), and LOS along SR 99 during the AM and PM peak hours for the future with project scenario. Each freeway study segment is also labeled with the type of HCM analysis method performed (i.e., basic, merge/diverge, weaving). A complete set of HCM output files are provided in Appendix E.

Freeway impacts were identified where the LOS was reduced below LOS D. Future operational deficiencies are a result of the projected growth and the impact of the SR 99 realignment.

For northbound SR 99, the freeway operations results are as follows:

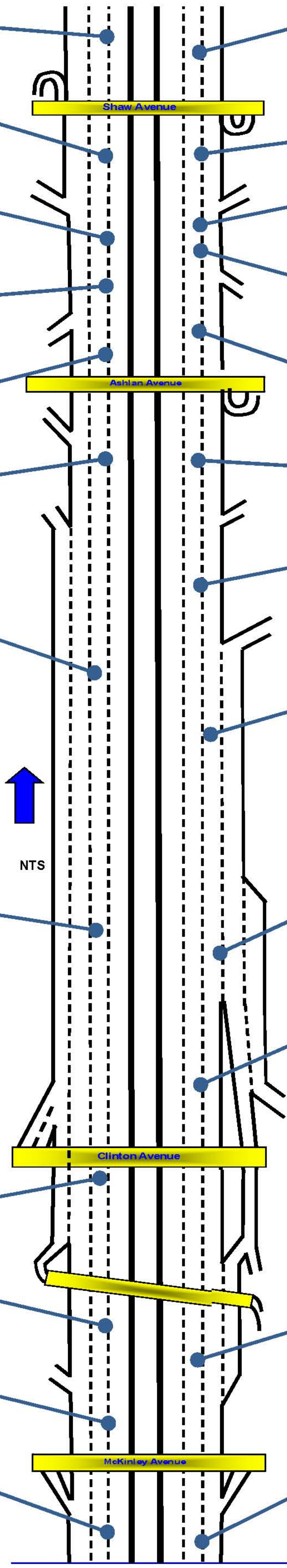
- From south of Clinton to Ashlan Avenue, operations for the future with project are the same or better than the future year (2035) No Project condition.
- North of Ashlan Avenue, operations for the future year (2035) No Project and with project options are the same, as the mainline improvements end south of Ashlan Avenue.

For southbound SR 99, the freeway operations results are as follows:

- North of Ashlan Avenue, operations for the future year (2035) No Project and with project options are the same, as the mainline improvements end south of Ashlan Avenue.
- Operations from Ashlan Avenue to Clinton Avenue improve under with project option due to the addition of the auxiliary lane and the elimination of several southbound ramps. Overall, the peak period LOS improves from approximately LOS E in the No Project scenario to LOS C in the with project scenario.

The analysis indicates an impact south of where the existing southbound Parkway on-ramp is located. Operations under the future year (2035) plus project are worse than future year (2035) No Project conditions because the redistribution of traffic creates a concentrated merge at the southbound Clinton Avenue on-ramp. Therefore, this is a significant impact under CEQA and a substantial impact under NEPA.

Under this scenario, traffic would redistribute due to the improvements along SR 99, which include the elimination of several southbound SR 99 ramps between Ashlan Avenue and Clinton Avenue. Figure 6.7-4 illustrates the traffic redistribution pattern with realignment of SR 99. The No Project network includes southbound off-ramps to Dakota Avenue, Shields Avenue and Princeton Avenue. These ramps will be removed with the realignment of SR 99. It was assumed that all existing traffic on the southbound off-ramp to Dakota Avenue would use the southbound off-ramp to Ashlan Avenue and all the traffic using Shields Avenue and Princeton Avenue would use the Clinton Avenue ramp.



North of Shaw Loop On-ramp
Basic

	Volume	Density	LOS
AM	3,185	18.4	C
PM	3,326	19.2	C

Between Shaw Ramps
Merge

	Volume	Density	LOS
AM	3,185	20.2	C
PM	3,327	20.9	C

Shaw to Ashlan
Merge

	Volume	Density	LOS
AM	4,405	28.6	D
PM	4,585	29.7	D

Shaw to Ashlan
Diverge

	Volume	Density	LOS
AM	4,405	30.8	D
PM	4,585	32.4	D

Between Ashlan Ramps
Basic

	Volume	Density	LOS
AM	3,795	22.0	C
PM	3,604	20.9	C

Ashlan to GoldenState
Merge

	Volume	Density	LOS
AM	4,592	29.8	D
PM	4,227	27.4	C

Golden State to Clinton
Basic

	Volume	Density	LOS
AM	5,763	24.5	C
PM	5,333	22.6	C

Golden State to Clinton
Diverge

	Volume	Density	LOS
AM	5,763	30.7	D
PM	5,333	29.1	D

Clinton to Vassar
Basic

	Volume	Density	LOS
AM	4,647	19.7	C
PM	4,179	17.7	B

Vassar to Parkway
Basic

	Volume	Density	LOS
AM	4,121	23.9	C
PM	3,819	22.1	C

Parkway to McKinley
Merge

	Volume	Density	LOS
AM	6,084	40.8	E
PM	5,520	37.1	E

South of McKinley
Merge

	Volume	Density	LOS
AM	6,711	42.1	F
PM	5,953	36.4	E

North of Shaw On-ramp
Merge

	Volume	Density	LOS
AM	4,218	27.3	C
PM	3,873	24.6	C

Between Shaw Ramps
Basic

	Volume	Density	LOS
AM	3,788	21.9	C
PM	3,742	21.6	C

Ashlan to Shaw
Diverge

	Volume	Density	LOS
AM	4,633	32.8	D
PM	4,952	35.1	E

Ashlan to Shaw
Merge

	Volume	Density	LOS
AM	4,633	28.2	D
PM	4,952	29.6	D

Between Ashlan On-ramps
Merge

	Volume	Density	LOS
AM	4,170	26.9	C
PM	4,551	28.4	D

Between Ashlan Ramps
Basic

	Volume	Density	LOS
AM	3,777	21.9	C
PM	4,292	24.9	C

Golden State to Ashlan
Diverge

	Volume	Density	LOS
AM	4,664	33.0	D
PM	5,301	36.1	E

Clinton to Golden State
Basic

	Volume	Density	LOS
AM	5,500	23.3	C
PM	6,250	26.9	D

Clinton to Golden State
Basic

	Volume	Density	LOS
AM	5,500	18.3	C
PM	6,250	20.7	C

Between Clinton Ramps
Basic

	Volume	Density	LOS
AM	4,527	26.3	D
PM	5,050	30.1	D

McKinley to Clinton
Diverge

	Volume	Density	LOS
AM	5,740	24.4	C
PM	6,533	28.4	D

South of McKinley
Diverge

	Volume	Density	LOS
AM	6,138	38.5	E
PM	6,988	46.7	F

Figure 6.7-4
Future Year (2035) with Project Freeway Operation Summary – Proposed SR 99 Realignment

6.7.2 Intersection Impacts

6.7.2.1 Existing Plus Project Conditions

Figure 6.7-5 presents the with project conditions intersection geometry based on the aforementioned roadway modifications. Based on the traffic distribution paths presented in Figure 6.7-3, project trips were distributed at the study intersections. These trips were then added to the existing intersection volumes to arrive at the existing plus project intersection volumes and are presented in Figure 6.7-6.

Intersection analysis was performed for the AM and PM peak hours and the results are presented in Table 6.7-1. This table compares the existing conditions to the existing plus project conditions. Based on the Authority's traffic impact criteria, impacts were identified also indicated in Table 6.7-1.

It can be noted from the table that two intersections, Clinton Avenue/Weber Avenue and Dakota Avenue/Brawley Avenue, would be impacted with the project added traffic under existing plus project conditions, which would be a significant impact under CEQA and a substantial impact under NEPA.

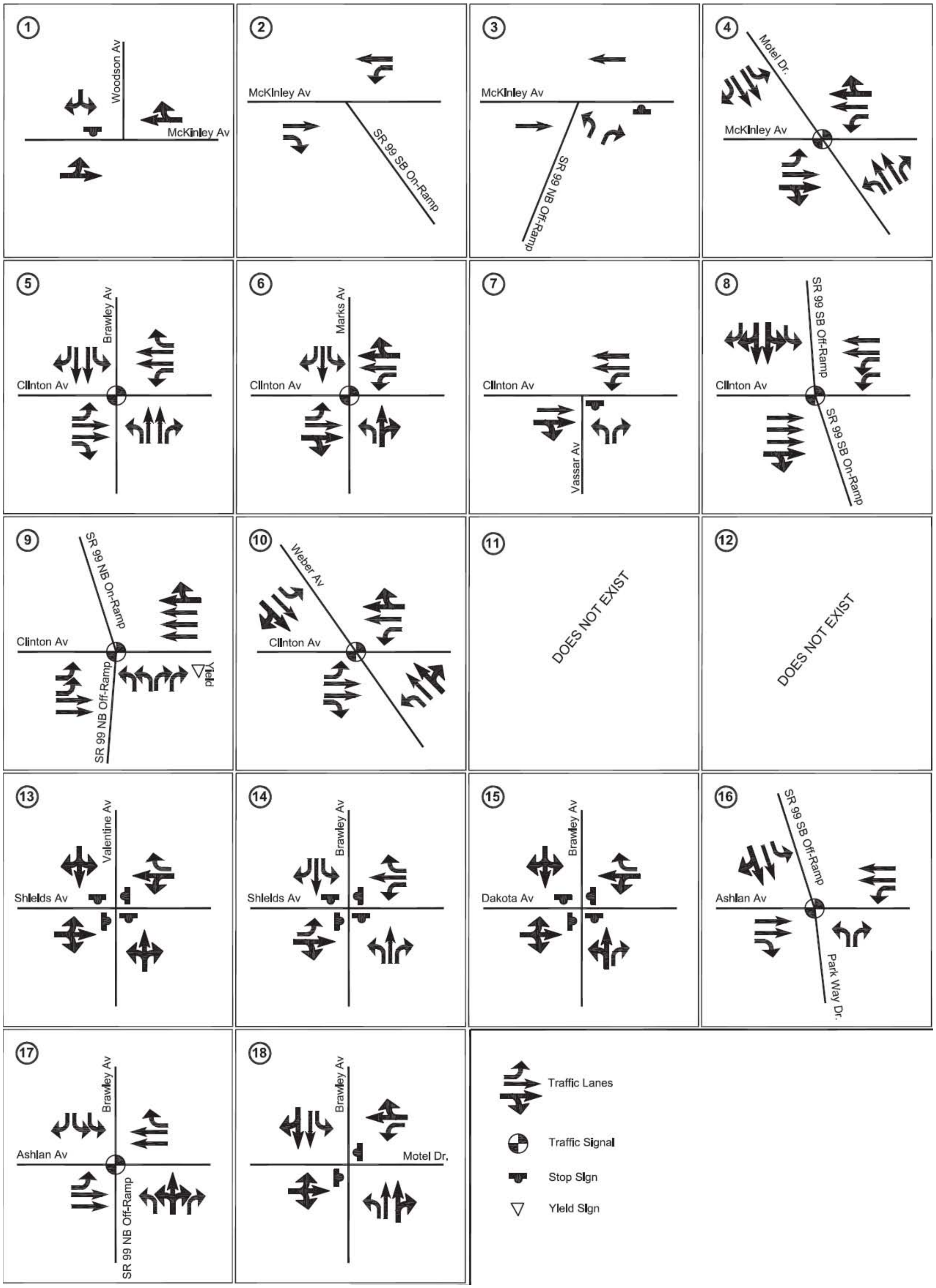


Figure 6.7-5
With Project Intersection Geometry – Proposed SR 99 Realignment

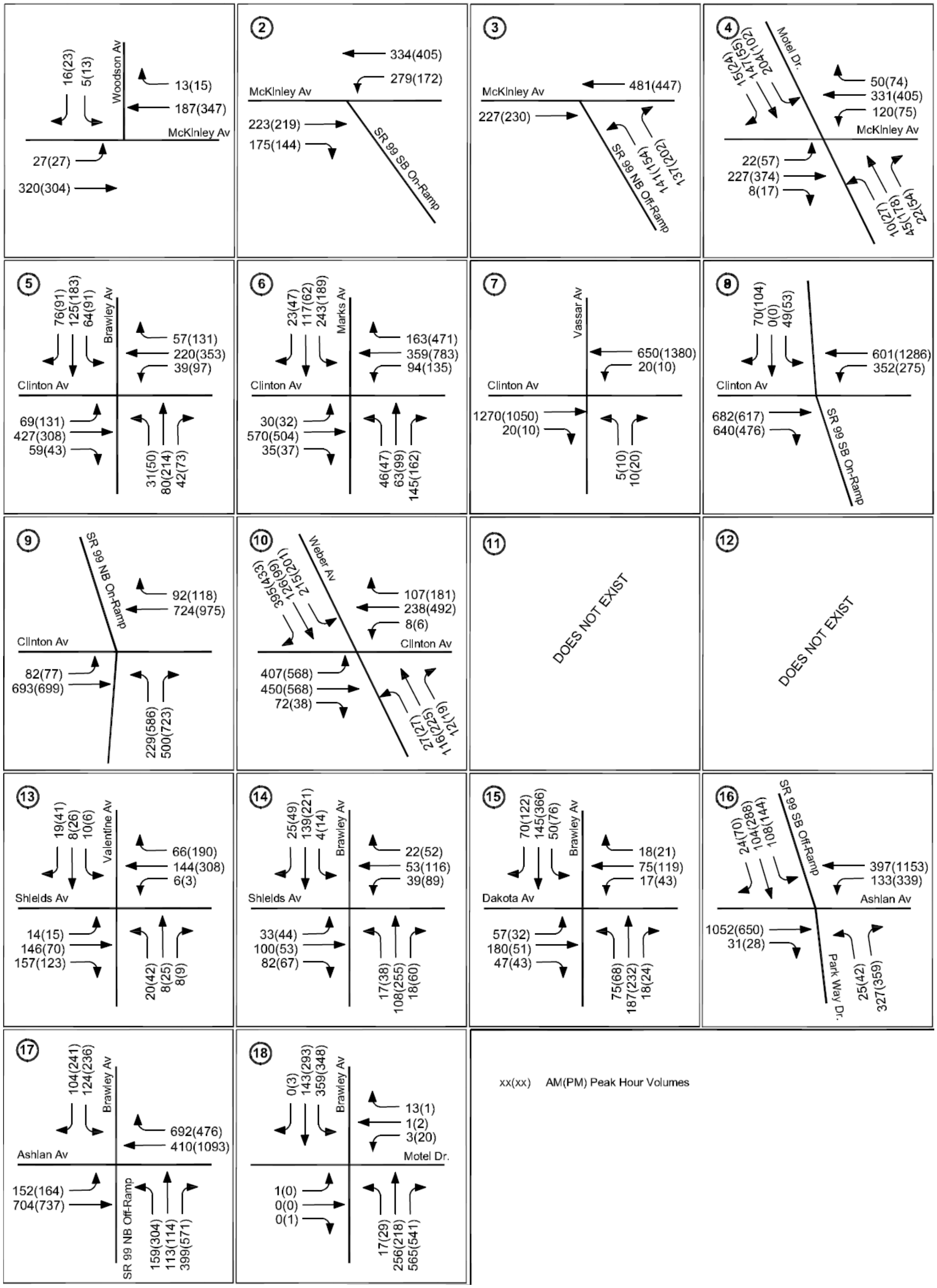


Figure 6.7-6
Existing with Project Intersection Volumes – Proposed SR 99 Realignment

Table 6.7-1
Existing with Project Intersections Analysis – Proposed SR 99 Realignment

	Intersection	Control	AM Peak Hour							PM Peak Hour						
			Existing			Existing plus HST			Impact	Existing			Existing plus HST			Impact
			Delay (sec)	LOS	ICU	Delay (sec)	LOS	ICU		Delay (sec)	LOS	ICU	Delay (sec)	LOS	ICU	
1	McKinley Ave and Woodson Ave	U[a]	12	B	0.34	11	B	0.47	No	14	B	0.33	13	B	0.49	No
2	McKinley Ave and SR 99 SB On-ramp	U[a]	10	A	0.44	9	A	0.43	No	9	A	0.43	9	A	0.42	No
3	McKinley Ave and SR 99 NB Off-ramp	U[a]	17	C	0.44	16	C	0.43	No	16	C	0.43	16	C	0.42	No
4	McKinley Ave and Golden State Blvd	S	15	B	0.47	16	B	0.47	No	14	B	0.46	15	B	0.46	No
5	Clinton Ave and Brawley Ave	S	15	B	0.41	20	B	0.48	No	20	B	0.46	24	C	0.51	No
6	Clinton Ave and Marks Ave	S	34	C	0.66	41	D	0.77	No	45	D	0.86	43	D	0.87	No
7	Clinton Ave and Vassar Ave	U[a]	>50	F	0.73	42	E	0.50	No	>50	F	0.63	19	C	0.52	No
8	Clinton Ave and SR 99 SB Ramps	S	-	-	-	15	B	0.48	No	-	-	-	9	A	0.55	No
9	Clinton Ave and SR 99 NB Ramps	S	10	A	0.45	17	B	0.48	No	13	B	0.55	17	B	0.55	No
10	Clinton Ave and Weber Ave	S	36	D	0.71	33	C	0.71	No	64	E	0.91	68	E	0.91	Yes
11	Princeton Ave and SR 99 SB Ramps/Parkway Dr	U[a]	9	A	0.16	-	-	-	No	9	A	0.21	-	-	-	No
12	Shields Ave and SR 99 SB	U	14	B	0.56	-	-	-	No	22	C	0.61	-	-	-	No

	Intersection	Control	AM Peak Hour							PM Peak Hour						
			Existing			Existing plus HST			Impact	Existing			Existing plus HST			Impact
			Delay (sec)	LOS	ICU	Delay (sec)	LOS	ICU		Delay (sec)	LOS	ICU	Delay (sec)	LOS	ICU	
	Ramps/Parkway Dr															
13	Shields Ave and Valentine Ave	U	12	B	0.47	9	A	0.41	No	12	B	0.43	11	B	0.44	No
14	Shields Ave and Brawley Ave	U	9	A	0.41	9	A	0.39	No	13	B	0.52	14	B	0.52	No
15	Dakota Ave and Brawley Ave	U	14	B	0.61	16	C	0.67	No	16	C	0.62	>50	F	0.77	Yes
16	Ashlan Ave and SR 99 SB Ramp/Parkway Dr	S	38	D	0.70	36	D	0.70	No	49	D	0.63	34	C	0.70	No
17	Ashlan Ave and SR 99 NB Ramp/Brawley Ave	S	32	C	0.78	32	C	0.78	No	56	E	0.83	57	E	0.83	No
18	Brawley Ave and Golden State Blvd	U[a]	>50	F	0.64	>50	F	0.64	No	>50	F	0.66	>50	F	0.66	No
				Signalized Avg ICU	0.60		Signalized Avg ICU	0.63			Signalized Avg ICU	0.69		Signalized Avg ICU	0.69	
				Unsignalized Avg ICU	0.48		Unsignalized Avg ICU	0.49			Unsignalized Avg ICU	0.49		Unsignalized Avg ICU	0.53	

Notes:

[a] Two-way stop controlled intersection. Delay reported for worst-case stop-controlled movement.

Intersection 8 does not exist under existing conditions.

Intersections 11 and 12 do not exist under Project conditions because of ramp closures.

U = Unsignalized, S = Signalized

Impacted locations are highlighted.

6.7.2.2 Future Year (2035) Plus Project Conditions

Figure 6.7-5 presents the with project conditions intersection geometry based on the aforementioned roadway modifications. Based on the traffic distribution paths presented in Figure 6.7-3, project trips were distributed at the study intersections. These trips were then added to the future No Project intersection volumes to arrive at the future plus project intersection volumes and are presented in Figure 6.7-7.

Intersection analysis was performed for the AM and PM peak hours and the results are presented in Table 6.7-2. This table compares the future No Project conditions to the future plus project conditions. Based on the Authority's traffic impact criteria, intersection impacts were identified also indicated in Table 6.7-2.

It can be noted from the table that the following seven intersections were impacted under this scenario:

- Clinton Avenue and Brawley Avenue
- Clinton Avenue and Marks Avenue
- Clinton Avenue and SR 99 Southbound Ramps
- Clinton Avenue and Weber Avenue
- Shields Avenue and Brawley Avenue
- Dakota Avenue and Brawley Avenue
- Ashlan Avenue and SR 99 Southbound Ramp/Parkway Drive

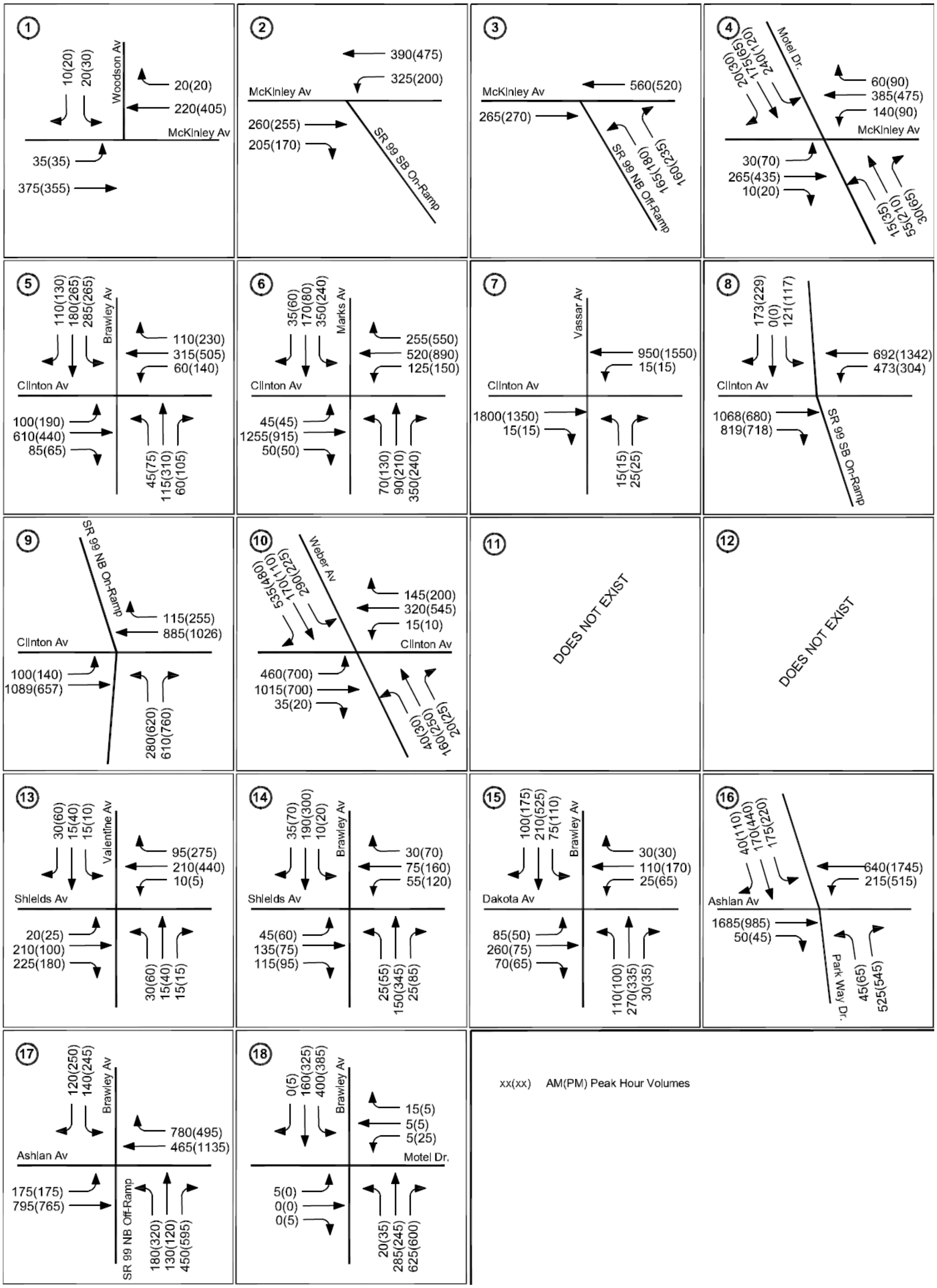


Figure 6.7-7
Future Year (2035) with Project Intersection Volumes – SR 99 Realignment

Table 6.7-2
Future Year (2035) with Project Intersections Analysis – Proposed SR 99 Realignment

	Intersection	Control	AM Peak Hour							PM Peak Hour						
			2035 No Project			2035 plus HST			Impact	2035 No Project			2035 plus HST			Impact
			Delay (sec)	LOS	ICU	Delay (sec)	LOS	ICU		Delay (sec)	LOS	ICU	Delay (sec)	LOS	ICU	
1	McKinley Ave and Woodson Ave	U[a]	15	C	0.48	13	B	0.61	No	20	C	0.47	18	C	0.69	No
2	McKinley Ave and SR 99 SB On-ramp	U[a]	13	B	0.61	12	B	0.59	No	11	B	0.59	11	B	0.57	No
3	McKinley Ave and SR 99 NB Off-ramp	U[a]	>50	F	0.61	>50	F	0.59	No	>50	F	0.59	>50	F	0.57	No
4	McKinley Ave and Golden State Blvd	S	17	B	0.58	17	B	0.58	No	16	B	0.58	16	B	0.58	No
5	Clinton Ave and Brawley Ave	S	26	C	0.63	43	D	0.8	No	42	D	0.82	63	E	0.94	Yes
6	Clinton Ave and Marks Ave	S	>80	F	1.26	>80	F	1.51	Yes	>80	F	1.08	>80	F	1.29	Yes
7	Clinton Ave and Vassar Ave	U[a]	>50	F	1.14	>50	F	0.94	No	>50	F	0.86	34	D	0.74	No
8	Clinton Ave and SR 99 SB Ramps	S	-	-	-	74	E	0.97	Yes	-	-	-	20	B	0.82	No
9	Clinton Ave and SR 99 NB Ramps	S	28	C	0.67	27	C	0.97	No	23	C	0.65	21	C	0.82	No
10	Clinton Ave and Weber Ave	S	>80	F	1.07	>80	F	1.15	Yes	>80	F	1.04	>80	F	1.05	Yes
11	Princeton Ave and SR 99 SB Ramps/Parkway Dr	U[a]	9	A	0.18	-	-	-	No	9	A	0.22	-	-	-	No

Intersection		Control	AM Peak Hour							PM Peak Hour						
			2035 No Project			2035 plus HST			Impact	2035 No Project			2035 plus HST			Impact
			Delay (sec)	LOS	ICU	Delay (sec)	LOS	ICU		Delay (sec)	LOS	ICU	Delay (sec)	LOS	ICU	
12	Shields Ave and SR 99 SB Ramps/Parkway Dr	U	>50	F	0.98	-	-	-	No	>50	F	0.91	-	-	-	No
13	Shields Ave and Valentine Ave	U	>50	F	0.95	>50	F	0.83	No	>50	F	0.88	>50	F	0.87	No
14	Shields Ave and Brawley Ave	U	23	C	0.66	28	D	0.66	No	>50	F	0.88	>50	F	0.85	Yes
15	Dakota Ave and Brawley Ave	U	>50	F	1.2	>50	F	1.33	Yes	>50	F	1.32	>50	F	1.65	Yes
16	Ashlan Ave and SR 99 SB Ramp/Parkway Dr	S	>80	F	1.81	>80	F	1.81	No	>80	F	1.41	>80	F	1.48	Yes
17	Ashlan Ave and SR 99 NB Ramp/Brawley Ave	S	74	E	0.99	74	E	0.99	No	75	E	0.89	75	E	0.89	No
18	Brawley Ave and Golden State Blvd	U[a]	>50	F	0.78	>50	F	0.78	No	>50	F	0.8	>50	F	0.8	No
			Signalized Avg ICU	0.99		Signalized Avg ICU	1.08			Signalized Avg ICU	0.98		Signalized Avg ICU	1.02		
			Unsignalized Avg ICU	0.76		Unsignalized Avg ICU	0.79			Unsignalized Avg ICU	0.75		Unsignalized Avg ICU	0.84		

Notes:

[a] Two-way stop controlled intersection. Delay reported for worst-case stop-controlled movement. U = Unsignalized, S = Signalized

Intersection 8 does not exist under no project conditions.

Intersections 11 and 12 do not exist under Project conditions because of ramp closures.

Locations with impacts are highlighted.

6.8 Fresno Analysis between McKinley Avenue and SR 180

South of Clinton Avenue, new overcrossings would be constructed at W McKinley Avenue, W Olive Avenue, and W Belmont Avenue, to carry traffic over the HST and UPRR corridors. To accommodate the HST alignment, Golden State Boulevard would be shifted to the west between Clinton Avenue and W Olive Avenue and would be closed between W Olive Avenue and W Belmont Avenue. To assess the impacts of the project in this area, roadway segment analysis was performed for both existing and future project conditions presented below.

6.8.1 Existing Plus Project Conditions

Table 6.8-1 presents the results of the roadway segment analysis for existing plus project conditions and compares against the existing conditions.

Table 6.8-1
Existing with Project Roadway Segment Analysis – Between McKinley Avenue and SR 180

No.	Roadway Segment	# of Lanes	Existing ADT	Existing LOS	Existing plus HST ADT	Existing plus HST LOS
1	Northwest Ave, north of W McKinley Ave	2/2	13,178	D	13,218	D
2	N Weber Ave, north of W McKinley Ave	1/1	6,200	D	6,202	D
3	W McKinley Ave, east of Northwest Ave	2/2	12,054	D	12,062	D
4	Northwest Ave, south of W McKinley Ave	2/2	6,660	C	6,710	C
5	N Weber Ave, north of W Olive Ave	1/1	7,762	D	7,822	D
6	W Olive Ave, west of N Weber Ave	2/2	10,732	D	10,742	D
7	W Olive Ave, east of N Weber Ave	2/2	11,202	D	11,218	D
8	N Weber Ave, south of W Olive Ave	1/1	6,476	D	9,634	D
9	N Golden State Blvd, north of W Belmont Ave	2/2	3,826	C	0	-
10	N Weber Ave, north of W Belmont Ave	1/1	7,142	D	10,300	D
11	W Belmont Ave, west of N Golden State Blvd	2/2	9,536	C	9,550	C
12	E Belmont Ave, east of N Weber Ave	2/2	9,768	C	9,788	C
13	N H St, south of E Belmont Ave	2/2	6,090	C	6,220	C

Notes:
Roadway segment 9 would be closed under project conditions

It can be noted from the table above that all the analyzed roadway segments continue to operate at LOS D or better under project conditions. Therefore, the impact would be less than significant under CEQA and negligible under NEPA.

6.8.2 Future Year (2035) Plus Project Conditions

Table 6.8-2 presents the results of the roadway segment analysis for future year (2035) plus project conditions and compares against the future year (2035) No Project conditions.

Table 6.8-2
Future Year (2035) with Project Conditions Roadway Segment Analysis – Between McKinley Avenue and SR 180

No.	Roadway Segment	# of Lanes	2035 No Project ADT	2035 No Project LOS	2035 plus HST ADT	2035 plus HST LOS
1	Northwest Ave, north of W McKinley Ave	2/2	22,618	D	22,658	D
2	N Weber Ave, north of W McKinley Ave	1/1	9,770	D	9,772	D
3	W McKinley Ave, east of Northwest Ave	2/2	15,336	D	15,344	D
4	Northwest Ave, south of W McKinley Ave	2/2	17,530	D	17,580	D
5	N Weber Ave, north of W Olive Ave	1/1	20,344	F	20,404	F
6	W Olive Ave, west of N Weber Ave	2/2	36,662	F	36,672	F
7	W Olive Ave, east of N Weber Ave	2/2	27,004	D	27,018	D
8	N Weber Ave, south of W Olive Ave	1/1	16,320	D	25,090	D
9	N Golden State Blvd, north of W Belmont Ave	2/2	10,840	C	0	C
10	N Weber Ave, north of W Belmont Ave	1/1	14,860	D	23,630	D
11	W Belmont Ave, west of N Golden State Blvd	2/2	21,822	D	21,836	D
12	E Belmont Ave, east of N Weber Ave	2/2	27,826	E	27,846	E
13	N H St, south of E Belmont Ave	2/2	9,758	C	9,888	C

Notes:
Roadway segment 9 would be closed under project conditions

It can be noted from the table that three of the study roadway segments are projected to operate at LOS E or higher under Future No Project conditions. The roadway segments projected to operate at LOS E or higher are:

- N Weber Avenue, north of W Olive Avenue
- W Olive Avenue, west of N Weber Avenue
- E Belmont Avenue, east of N Weber Avenue

The three roadway segments are projected to continue to operate at LOS E or higher under future plus project conditions with an increase in V/C ratio, if any, of less than 0.04. Addition of the traffic from the proposed project is not expected to have any impacts on the study roadway segments; therefore, the impact would be less than significant under CEQA and negligible under NEPA.

6.9 Impacts on the Local Roadway Network due to Station Activity – All Alternatives: Merced Station

6.9.1 Merced Area Trip Distribution and Assignment

The proposed Downtown Merced Station would be located between Martin Luther King Jr. Way and G Street, along 15th Street. Station access would be provided along both 15th and 16th Streets. Because of the at-grade HST alignment near the station, an overpass at G Street would be built and D Street closed to eliminate the at-grade crossing of the tracks. Also, signalization of the 16th Street and H Street intersection was assumed under project conditions, because this intersection provides primary access to the station along 16th Street. These roadway modifications along with the other activity at the Merced station affects the local roadway network in the downtown area as described.

There are two phases of the California HST system planned. Phase 1 would connect San Francisco to Los Angeles via the Pacheco Pass and the Central Valley. Phase 2 is designed to connect from the Central Valley (Downtown Merced Station) to the state's capital, Sacramento, with another extension planned from Los Angeles to San Diego. Consequently, Merced would have a higher parking demand with the first phase of construction (estimated at 7,700 spaces in 2035) and a lesser parking demand after Phase 2 is operational (estimated at 2,000 spaces), because riders would shift to more convenient stations as they become available.

Based on these conditions, Merced officials have requested (March 2010 meeting with the City of Merced) that two parking options be explored—one (Option A) that builds the Phase 1 parking immediately adjacent to the station and another (Option B) that only constructs the needed Phase 2 parking at the station and disperses the remaining parking throughout an area within 3 miles of the station. The two parking options for traffic analysis are identified as follows:

- Option A – All parking at the station, primarily in structured parking
- Option B – 2,000 structured parking spaces at the station plus dispersed parking around the station area with connecting shuttles (The 2,000 spaces would be constructed in the same footprint as Option A; accordingly, Option B could always be expanded with more/taller parking structures as demand requires if dispersed parking ever becomes an issue, which is not anticipated)

The parking analysis assumed the projected Phase 1 2035 parking demand, which has the greatest impacts (to be conservative, even though Phase 2 with a Sacramento extension is expected in 2035 with resultant lower parking demand in Merced). For the initial Phase 1 HST operation prior to 2035, approximately 10 to 15% less parking is expected to be needed. The parking schematics for Options A and B are presented in Figures 6.9-1 and 6.9-2, respectively and the project trip distribution for Merced station is presented in Figure 6.9-3.

Figure 6.9-1
Downtown Merced Station – Parking Option A

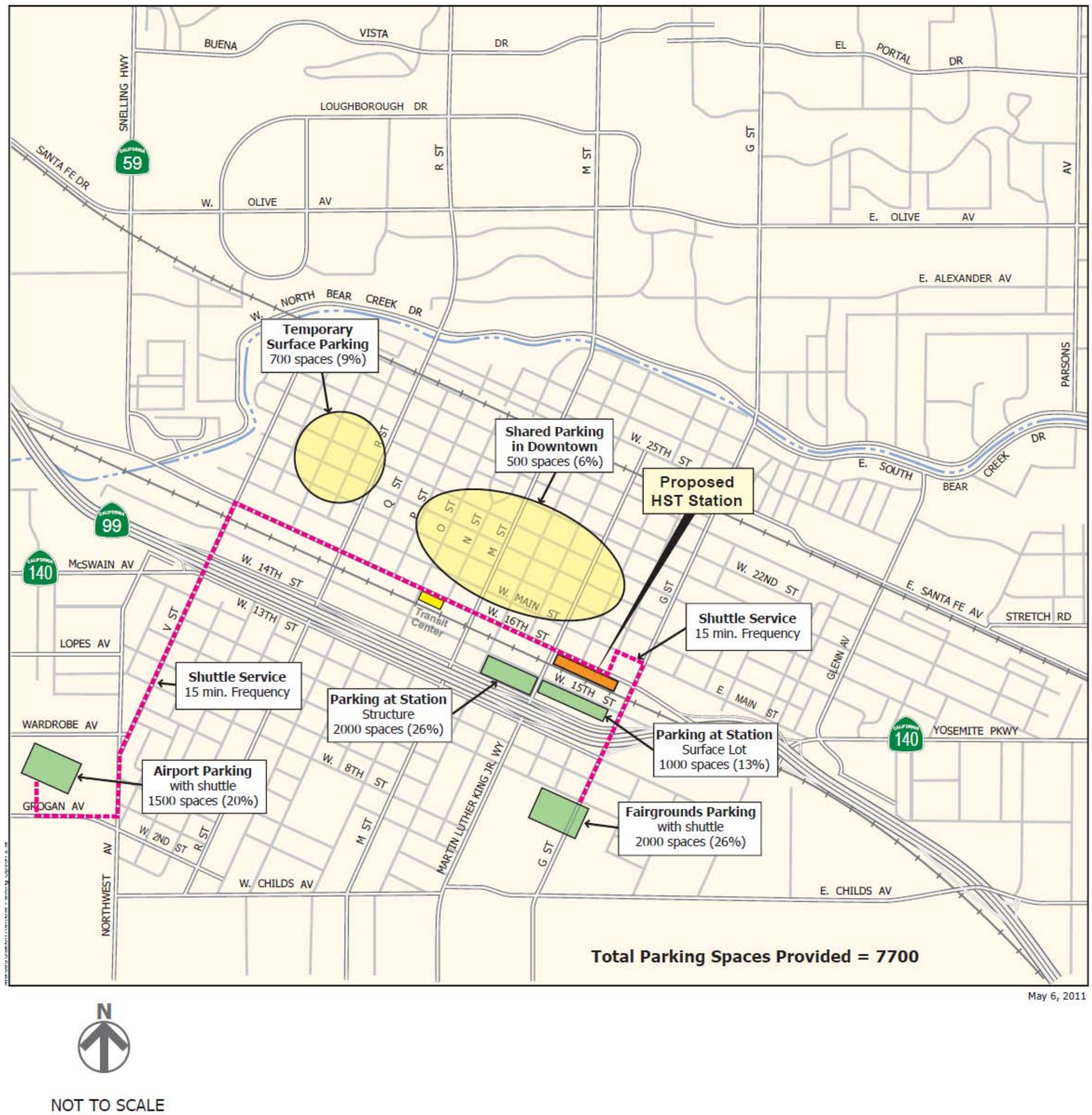


Figure 6.9-2
Downtown Merced Station – Parking Option B

Figure 6.9-3
Trip Distribution – Downtown Merced Station

6.9.2 Merced Area Roadway Impacts

6.9.2.1 Existing Plus Project Conditions

Based on the trip distribution percentages presented in Figure 6.9-3, project volumes were developed for the roadway segments for both Options A and B for the AM and PM peak hour conditions. These volumes were then added to the existing volumes to obtain existing with project volumes.

Based on the existing geometry and existing with project volumes, roadway segment analysis was performed for the AM and PM peak hours. The results of the analysis compared to the existing conditions are presented in Table 6.9-1 for Option A and Table 6.9-2 for Option B. LOS calculation sheets for both options are presented in Appendix C.

Roadway segment analysis of AM and PM peak hours used traffic impact criteria set forth earlier in this section. Following the criteria for roadway segments, it can be noted from the tables that one roadway segment (M Street between 13th and 16th Streets) under Option A and two roadway segments (V Street west of 13th Street and M Street between 13th and 16th Streets) under Option B, would have an increase in v/c of more than 0.04 with project added traffic, which would result in a significant impact under CEQA and a substantial impact under NEPA.

6.9.2.2 Future Year (2035) Plus Project Conditions

Based on the distribution percentages presented in Figure 6.9-3, project volumes were developed for the roadway segments for both Options A and B for the AM and PM peak hour conditions. These volumes were then added to the future year (2035) No Project volumes to obtain future year (2035) with project volumes.

Based on the existing geometry and future year (2035) with project volumes, roadway segment analysis was performed for the AM and PM peak hours. The results of the analysis compared to the future year (2035) No Project conditions are presented in Table 6.9-3 for Option A and Table 6.9-4 for Option B. LOS calculation sheets for both options are presented in Appendix C.

Roadway segment analysis of AM and PM peak hours used traffic impact criteria set forth earlier in this section. Following the criteria for roadway segments, it can be noted from the tables that six roadway segments under Option A and eight under Option B have an increase in v/c of more than 0.04 with project added traffic, which would result in a significant impact under CEQA and substantial impact under NEPA.

Table 6.9-1
Existing with Project Roadway Analysis – Downtown Merced Station (Parking Option A)

Segment	Travel Lanes	AM Peak Hour							PM Peak Hour						
		Existing			Existing plus HST			Impact	Existing			Existing plus HST			Impact
		Vols	V/C	LOS	Vols	V/C	LOS		Vols	V/C	LOS	Vols	V/C	LOS	
Main Street															
- Between Martin Luther King Jr. Way and M St	2	237	0.23	A	241	0.24	A	No	487	0.48	A	491	0.48	A	No
- Between G St and Martin Luther King Jr. Way	4	193	0.09	A	779	0.35	A	No	339	0.15	A	1,073	0.49	A	No
- Between Yosemite Pkwy (SR 140) and G St	2	278	0.27	A	686	0.67	B	No	292	0.29	A	784	0.77	C	No
16th Street															
- Between V St and SR 59	4	1,367	0.62	B	1,421	0.64	B	No	1,888	0.85	D	1,947	0.88	D	No
- Between R St and M St	4	810	0.37	A	961	0.43	A	No	1,335	0.60	A	1,489	0.67	B	No
- Between Martin Luther King Jr. Way and M St	4	835	0.38	A	1,244	0.56	A	No	1,328	0.60	A	1,738	0.79	C	No
- Between G St and Martin Luther King Jr. Way	4	825	0.37	A	733	0.33	A	No	1,198	0.54	A	1,061	0.48	A	No
- Between Yosemite Pkwy (SR 140) and G St	4	652	0.30	A	322	0.15	A	No	987	0.45	A	491	0.22	A	No
15th Street															
- Between R St and M St	2	120	0.12	A	161	0.16	A	No	322	0.32	A	353	0.35	A	No
- Between Martin Luther King Jr. Way and M St	2	98	0.10	A	168	0.16	A	No	294	0.29	A	556	0.54	A	No
- Between G St and Martin Luther King Jr. Way	2	149	0.15	A	93	0.09	A	No	293	0.29	A	182	0.18	A	No

Segment	Travel Lanes	AM Peak Hour							PM Peak Hour						
		Existing			Existing plus HST			Impact	Existing			Existing plus HST			Impact
		Vols	V/C	LOS	Vols	V/C	LOS		Vols	V/C	LOS	Vols	V/C	LOS	
V Street															
- West of 13th St	2	686	0.67	B	720	0.71	B	No	862	0.84	D	891	0.87	D	No
- Between 13th St and 16th St	4	1,199	0.54	A	1,253	0.57	A	No	1,525	0.69	B	1,581	0.72	C	No
- East of 16th St	2	648	0.63	B	648	0.63	B	No	754	0.74	C	754	0.74	C	No
R Street															
- West of 13th St	2	753	0.74	C	753	0.74	C	No	990	0.97	E	990	0.97	E	No
- Between 13th St and 16th St	4	964	0.44	A	1,044	0.47	A	No	1,391	0.63	B	1,444	0.65	B	No
- East of 16th St	4	1,030	0.47	A	1,047	0.47	A	No	1,586	0.72	C	1,603	0.73	C	No
M Street															
- West of 13th St	2	567	0.56	A	596	0.58	A	No	660	0.65	B	689	0.67	B	No
- Between 13th St and 16th St	2	648	0.63	B	1,008	0.99	E	Yes	713	0.70	B	1,036	1.01	F	Yes
- East of 16th St	4	1,155	0.52	A	1,195	0.54	A	No	1,296	0.59	A	1,335	0.60	A	No
Martin Luther King Jr. Way															
- West of Child Ave	4	883	0.40	A	941	0.43	A	No	1,072	0.49	A	1,130	0.51	A	No
- Between Child Ave and 13th St	4	721	0.33	A	758	0.34	A	No	1,035	0.47	A	1,082	0.49	A	No
- Between 13th St and 16th St	4	787	0.36	A	845	0.38	A	No	1,022	0.46	A	1,054	0.48	A	No
- East of 16th St	2	276	0.27	A	276	0.27	A	No	426	0.42	A	426	0.42	A	No
G Street															
- West of 13th St	2	549	0.54	A	550	0.54	A	No	578	0.57	A	579	0.57	A	No
- Between 13th St and 16th St	4	882	0.40	A	931	0.42	A	No	1,027	0.46	A	1,087	0.49	A	No
- East of 16th St	4	1,387	0.63	B	884	0.40	A	No	1,572	0.71	C	1,098	0.50	A	No

Notes:
Locations with impacts are highlighted.

Table 6.9-2
Existing with Project Roadway Analysis – Downtown Merced Station (Parking Option B)

Segment	Travel Lanes	AM Peak Hour							PM Peak Hour						
		Existing			Existing plus HST			Impact	Existing			Existing plus HST			Impact
		Vols	V/C	LOS	Vols	V/C	LOS		Vols	V/C	LOS	Vols	V/C	LOS	
Main Street															
- Between Martin Luther King Jr. Way and M St	2	237	0.23	A	239	0.23	A	No	487	0.48	A	489	0.48	A	No
- Between G St and Martin Luther King Jr. Way	4	193	0.09	A	783	0.35	A	No	339	0.15	A	1,076	0.49	A	No
- Between Yosemite Pkwy (SR 140) and G St	2	278	0.27	A	696	0.68	B	No	292	0.29	A	793	0.78	C	No
16th Street															
- Between V St and SR 59	4	1,367	0.62	B	1,421	0.64	B	No	1,888	0.85	D	1,947	0.88	D	No
- Between R St and M St	4	810	0.37	A	971	0.44	A	No	1,335	0.60	A	1,500	0.68	B	No
- Between Martin Luther King Jr. Way and M St	4	835	0.38	A	1,242	0.56	A	No	1,328	0.60	A	1,735	0.79	C	No
- Between G St and Martin Luther King Jr. Way	4	825	0.37	A	728	0.33	A	No	1,198	0.54	A	1,063	0.48	A	No
- Between Yosemite Pkwy (SR 140) and G St	4	652	0.30	A	320	0.14	A	No	987	0.45	A	484	0.22	A	No
15th Street															
- Between R St and M St	2	120	0.12	A	127	0.12	A	No	322	0.32	A	340	0.33	A	No
- Between Martin Luther King Jr. Way and M St	2	98	0.10	A	147	0.14	A	No	294	0.29	A	386	0.38	A	No
- Between G St and Martin Luther King Jr. Way	2	149	0.15	A	122	0.12	A	No	293	0.29	A	211	0.21	A	No
V Street															
- West of 13th St	2	686	0.67	B	768	0.75	C	No	862	0.84	D	957	0.94	E	Yes

Segment	Travel Lanes	AM Peak Hour						Impact	PM Peak Hour						Impact
		Existing			Existing plus HST				Existing			Existing plus HST			
		Vols	V/C	LOS	Vols	V/C	LOS		Vols	V/C	LOS	Vols	V/C	LOS	
- Between 13th St and 16th St	4	1,199	0.54	A	1,296	0.59	A	No	1,525	0.69	B	1,629	0.74	C	No
- East of 16th St	2	648	0.63	B	681	0.67	B	No	754	0.74	C	787	0.77	C	No
R Street															
- West of 13th St	2	753	0.74	C	753	0.74	C	No	990	0.97	E	990	0.97	E	No
- Between 13th St and 16th St	4	964	0.44	A	1,014	0.46	A	No	1,391	0.63	B	1,436	0.65	B	No
- East of 16th St	4	1,030	0.47	A	1,045	0.47	A	No	1,586	0.72	C	1,601	0.72	C	No
M Street															
- West of 13th St	2	567	0.56	A	599	0.59	A	No	660	0.65	B	696	0.68	B	No
- Between 13th St and 16th St	2	648	0.63	B	954	0.93	E	Yes	713	0.70	B	974	0.95	E	Yes
- East of 16th St	4	1,155	0.52	A	1,192	0.54	A	No	1,296	0.59	A	1,333	0.60	A	No
Martin Luther King Jr. Way															
- West of Child Ave	4	883	0.40	A	940	0.43	A	No	1,072	0.49	A	1,129	0.51	A	No
- Between Child Ave and 13th St	4	721	0.33	A	764	0.35	A	No	1,035	0.47	A	1,135	0.51	A	No
- Between 13th St and 16th St	4	787	0.36	A	840	0.38	A	No	1,022	0.46	A	1,053	0.48	A	No
- East of 16th St	2	276	0.27	A	276	0.27	A	No	426	0.42	A	426	0.42	A	No
G Street															
- West of 13th St	2	549	0.54	A	577	0.57	A	No	578	0.57	A	603	0.59	A	No
- Between 13th St and 16th St	4	882	0.40	A	946	0.43	A	No	1,027	0.46	A	1,100	0.50	A	No
- East of 16th St	4	1,387	0.63	B	884	0.40	A	No	1,572	0.71	C	1,098	0.50	A	No

Notes:
Locations with impacts are highlighted.

Table 6.9-3
Future Year (2035) with Project Roadway Analysis Results around Proposed Merced HST Station – Parking Option A

Segment	Travel Lanes	AM Peak Hour							PM Peak Hour						
		2035 No Project			2035 plus HST			Impact	2035 No Project			2035 plus HST			Impact
		Vols	V/C	LOS	Vols	V/C	LOS		Vols	V/C	LOS	Vols	V/C	LOS	
Main Street															
- Between Martin Luther King Jr. Way and M St	2	414	0.41	A	418	0.41	A	No	826	0.81	C	830	0.81	D	No
- Between G St and Martin Luther King Jr. Way	4	339	0.15	A	1,458	0.66	B	No	574	0.26	A	1,836	0.83	D	No
- Between Yosemite Pkwy (SR 140) and G St	2	490	0.48	A	1,251	1.23	F	Yes	507	0.50	A	1,393	1.36	F	Yes
16th Street															
- Between V St and SR 59	4	2,335	1.06	F	2,389	1.08	F	No	3,344	1.51	F	3,403	1.54	F	No
- Between R St and M St	4	1,402	0.63	B	1,554	0.70	B	No	2,341	1.06	F	2,495	1.13	F	Yes
- Between Martin Luther King Jr. Way and M St	4	1,465	0.66	B	1,874	0.85	D	No	2,288	1.04	F	2,698	1.22	F	Yes
- Between G St and Martin Luther King Jr. Way	4	1,458	0.66	B	1,197	0.54	A	No	2,079	0.94	E	1,734	0.78	C	No
- Between Yosemite Pkwy (SR 140) and G St	4	1,155	0.52	A	828	0.37	A	No	1,670	0.76	C	716	0.32	A	No
15th Street															
- Between R St and M St	2	213	0.21	A	255	0.25	A	No	554	0.54	A	586	0.57	A	No
- Between Martin Luther King Jr. Way and M St	2	175	0.17	A	242	0.24	A	No	510	0.50	A	748	0.73	C	No
- Between G St and Martin Luther King Jr. Way	2	280	0.27	A	185	0.18	A	No	538	0.53	A	355	0.35	A	No
V Street															
- West of 13th St	2	1,294	1.27	F	1,328	1.30	F	No	1,622	1.59	F	1,651	1.62	F	No

Segment	Travel Lanes	AM Peak Hour							PM Peak Hour						
		2035 No Project			2035 plus HST			Impact	2035 No Project			2035 plus HST			Impact
		Vols	V/C	LOS	Vols	V/C	LOS		Vols	V/C	LOS	Vols	V/C	LOS	
- Between 13th St and 16th St	4	2,319	1.05	F	2,374	1.07	F	No	2,950	1.33	F	3,007	1.36	F	No
- East of 16th St	2	1,209	1.18	F	1,209	1.18	F	No	1,430	1.40	F	1,430	1.40	F	No
R Street															
- West of 13th St	2	1,435	1.41	F	1,435	1.41	F	No	1,895	1.86	F	1,895	1.86	F	No
- Between 13th St and 16th St	4	1,865	0.84	D	1,945	0.88	D	No	2,694	1.22	F	2,747	1.24	F	No
- East of 16th St	4	1,961	0.89	D	1,978	0.90	D	No	3,042	1.38	F	3,059	1.38	F	No
M Street															
- West of 13th St	2	1,038	1.02	F	1,067	1.05	F	No	1,212	1.19	F	1,241	1.22	F	No
- Between 13th St and 16th St	2	1,229	1.20	F	1,589	1.56	F	Yes	1,348	1.32	F	1,671	1.64	F	Yes
- East of 16th St	4	2,164	0.98	E	2,204	1.00	E	No	2,465	1.12	F	2,504	1.13	F	No
Martin Luther King Jr. Way															
- West of Child Ave	4	1,671	0.76	C	1,729	0.78	C	No	2,027	0.92	E	2,085	0.94	E	No
- Between Child Ave and 13th St	4	1,383	0.63	B	1,420	0.64	B	No	1,984	0.90	D	2,031	0.92	E	Yes
- Between 13th St and 16th St	4	1,510	0.68	B	1,592	0.72	C	No	1,958	0.89	D	2,007	0.91	D	No
- East of 16th St	2	523	0.51	A	523	0.51	A	No	816	0.80	C	816	0.80	C	No
G Street															
- West of 13th St	2	1,048	1.03	F	1,049	1.03	F	No	1,106	1.08	F	1,107	1.08	F	No
- Between 13th St and 16th St	4	1,691	0.77	C	1,950	0.88	D	No	1,966	0.89	D	2,134	0.97	E	Yes
- East of 16th St	4	2,638	1.19	F	1,908	0.86	D	No	2,967	1.34	F	2,157	0.98	E	No

Notes:

Locations with impacts are highlighted.

Table 6.9-4
Future Year (2035) with Project Roadway Analysis Results around Proposed Merced HST Station – Parking Option B

Segment	Travel Lanes	AM Peak Hour							PM Peak Hour						
		2035 No Project			2035 plus HST			Impact	2035 No Project			2035 plus HST			Impact
		Vols	V/C	LOS	Vols	V/C	LOS		Vols	V/C	LOS	Vols	V/C	LOS	
Main Street															
- Between Martin Luther King Jr. Way and M St	2	414	0.41	A	416	0.41	A	No	826	0.81	C	828	0.81	D	No
- Between G St and Martin Luther King Jr. Way	4	339	0.15	A	1,462	0.66	B	No	574	0.26	A	1,839	0.83	D	No
- Between Yosemite Pkwy (SR 140) and G St	2	490	0.48	A	1,261	1.24	F	Yes	507	0.50	A	1,402	1.37	F	Yes
16th Street															
- Between V St and SR 59	4	2,335	1.06	F	2,389	1.08	F	No	3,344	1.51	F	3,403	1.54	F	No
- Between R St and M St	4	1,402	0.63	B	1,563	0.71	B	No	2,341	1.06	F	2,506	1.13	F	Yes
- Between Martin Luther King Jr. Way and M St	4	1,465	0.66	B	1,872	0.85	D	No	2,288	1.04	F	2,695	1.22	F	Yes
- Between G St and Martin Luther King Jr. Way	4	1,458	0.66	B	1,192	0.54	A	No	2,079	0.94	E	1,736	0.79	C	No
- Between Yosemite Pkwy (SR 140) and G St	4	1,155	0.52	A	826	0.37	A	No	1,670	0.76	C	709	0.32	A	No
15th Street															
- Between R St and M St	2	213	0.21	A	220	0.22	A	No	554	0.54	A	572	0.56	A	No
- Between Martin Luther King Jr. Way and M St	2	175	0.17	A	221	0.22	A	No	510	0.50	A	578	0.57	A	No
- Between G St and Martin Luther King Jr. Way	2	280	0.27	A	214	0.21	A	No	538	0.53	A	384	0.38	A	No
V Street															
- West of 13th St	2	1,294	1.27	F	1,376	1.35	F	Yes	1,622	1.59	F	1,717	1.68	F	Yes
- Between 13th St and 16th St	4	2,319	1.05	F	2,417	1.09	F	Yes	2,950	1.33	F	3,054	1.38	F	Yes

Segment	Travel Lanes	AM Peak Hour						Impact	PM Peak Hour						Impact
		2035 No Project			2035 plus HST				2035 No Project			2035 plus HST			
		Vols	V/C	LOS	Vols	V/C	LOS		Vols	V/C	LOS	Vols	V/C	LOS	
- East of 16th St	2	1,209	1.18	F	1,242	1.22	F	No	1,430	1.40	F	1,463	1.43	F	No
R Street															
- West of 13th St	2	1,435	1.41	F	1,435	1.41	F	No	1,895	1.86	F	1,895	1.86	F	No
- Between 13th St and 16th St	4	1,865	0.84	D	1,915	0.87	D	No	2,694	1.22	F	2,739	1.24	F	No
- East of 16th St	4	1,961	0.89	D	1,976	0.89	D	No	3,042	1.38	F	3,057	1.38	F	No
M Street															
- West of 13th St	2	1,038	1.02	F	1,070	1.05	F	No	1,212	1.19	F	1,248	1.22	F	No
- Between 13th St and 16th St	2	1,229	1.20	F	1,534	1.50	F	Yes	1,348	1.32	F	1,609	1.58	F	Yes
- East of 16th St	4	2,164	0.98	E	2,201	1.00	E	No	2,465	1.12	F	2,502	1.13	F	No
Martin Luther King Jr. Way															
- West of Childs Ave	4	1,671	0.76	C	1,728	0.78	C	No	2,027	0.92	E	2,084	0.94	E	No
- Between Childs Ave and 13th St	4	1,383	0.63	B	1,426	0.65	B	No	1,984	0.90	D	2,084	0.94	E	Yes
- Between 13th St and 16th St	4	1,510	0.68	B	1,586	0.72	C	No	1,958	0.89	D	2,006	0.91	D	No
- East of 16th St	2	523	0.51	A	523	0.51	A	No	816	0.80	C	816	0.80	C	No
G Street															
- West of 13th St	2	1,048	1.03	F	1,076	1.05	F	No	1,106	1.08	F	1,131	1.11	F	No
- Between 13th St and 16th St	4	1,691	0.77	C	1,965	0.89	D	No	1,966	0.89	D	2,147	0.97	E	Yes
- East of 16th St	4	2,638	1.19	F	1,908	0.86	D	No	2,967	1.34	F	2,157	0.98	E	No

Notes:

Locations with impacts are highlighted.

6.9.3 Merced Area Intersection Impacts

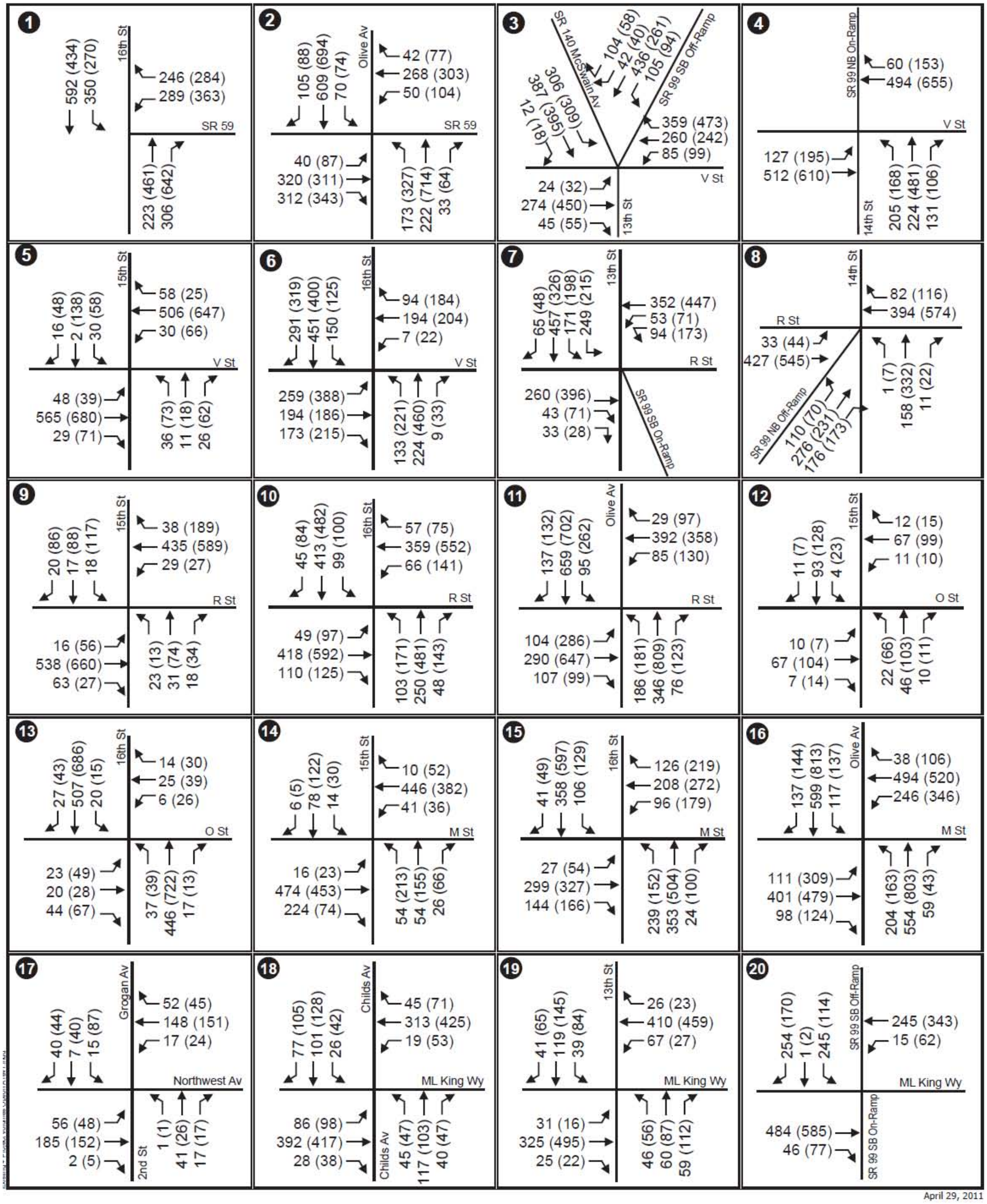
6.9.3.1 Existing Plus Project Conditions

Based on the distribution percentages presented in Figure 6.9-3, project volumes were developed at the study intersections for both Options A and B for the AM and PM peak hour conditions. These volumes were then added to the existing volumes to obtain existing with project volumes, which are presented in Figures 6.9-4(a) through 6.9-4(c) for Option A and Figures 6.9-5(a) through 6.9-5(c) for Option B, respectively. Existing intersection geometry was used for the analysis.

Based on the existing geometry and existing with project volumes, intersection analysis was performed for the AM and PM peak hours. The results of the analysis compared to the existing conditions are presented in Table 6.9-5 for Option A and Table 6.9-6 for Option B. LOS calculation sheets for both options are presented in Appendix C.

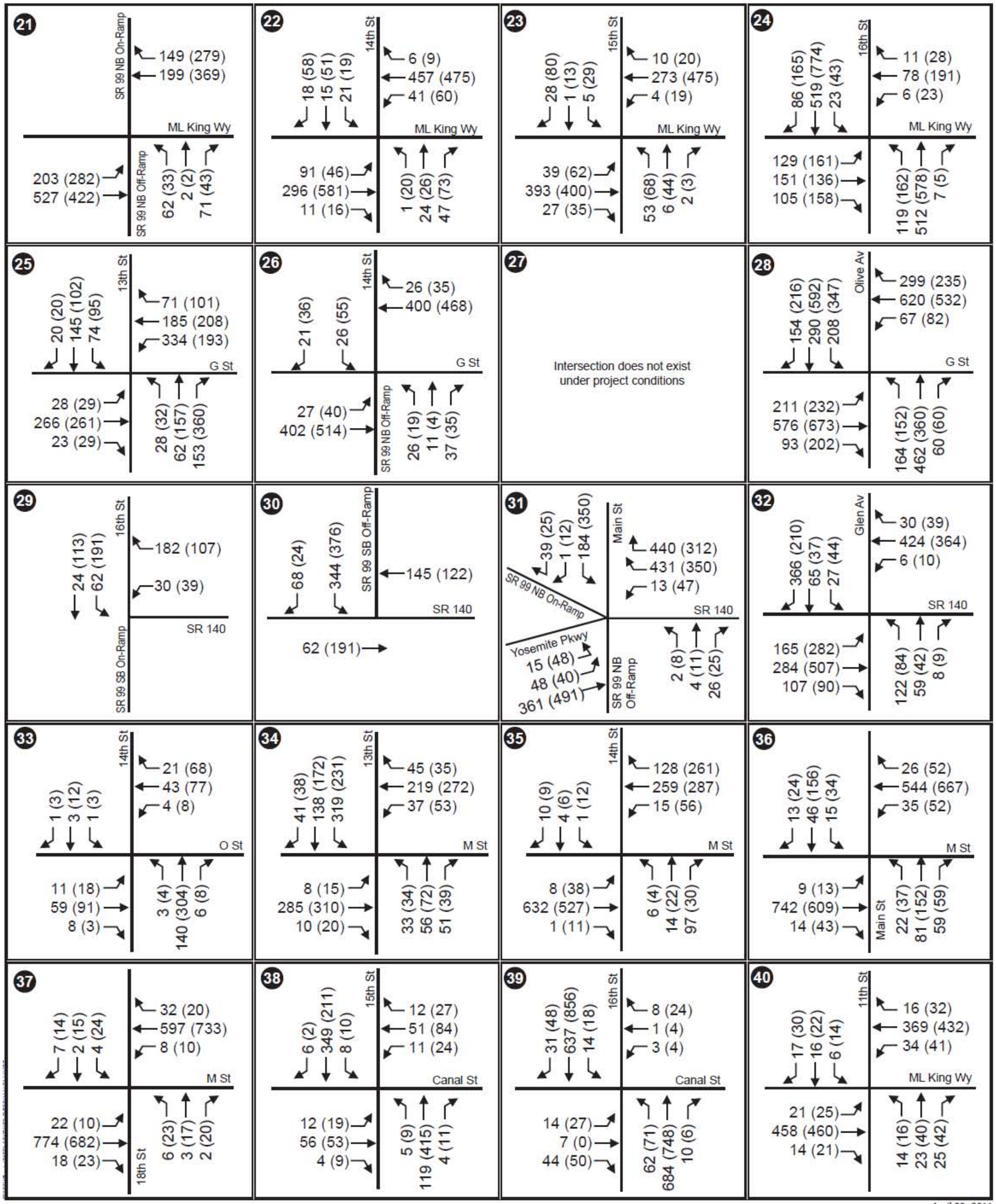
Traffic impacts at study intersections were identified based on the Authority traffic impact criteria guidelines presented in Section 6.4. Intersections with project impacts are highlighted in the tables.

It can be noted from Table 6.9-5 that for Option A, seven intersections (1, 14, 22, 25, 31, 39, and 44) are impacted by the added project traffic. It can be noted from Table 6.9-6 that for Option B, six intersections (1, 22, 25, 31, 39, and 44) are impacted by the added project traffic. The intersection impacts identified surrounding the Merced station are considered to be substantial under NEPA. The impacts are considered to be significant under CEQA.



xx (xx) AM (PM) Peak Hour Volumes

Figure 6.9-4 (a)
Existing with Project Volumes for Parking Option A – Downtown Merced Station



xx (xx) AM (PM) Peak Hour Volumes

Figure 6.9-4 (b)
Existing with Project Volumes for Parking Option A – Downtown Merced Station

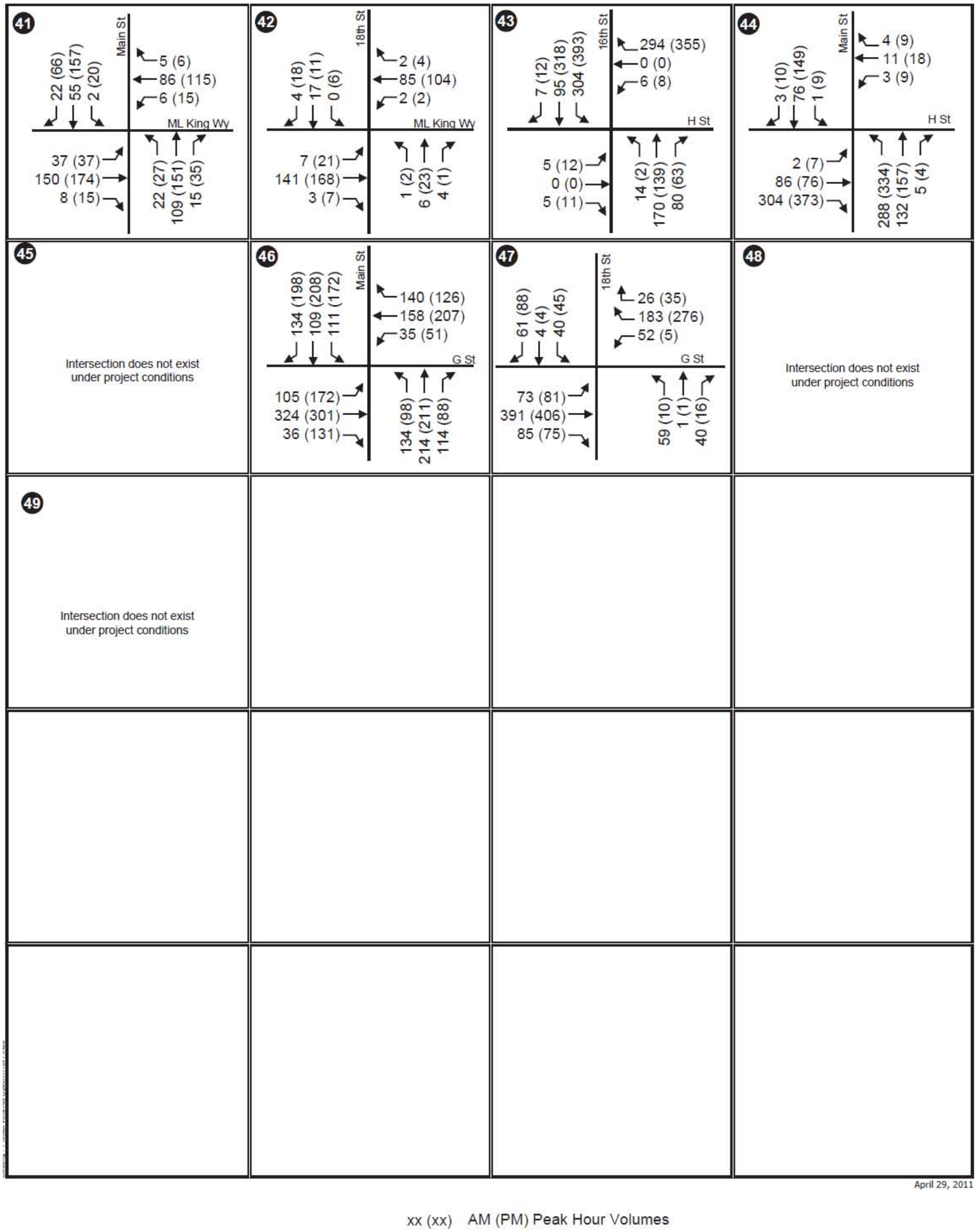


Figure 6.9-4 (c)
Existing with Project Volumes for Parking Option A – Downtown Merced Station

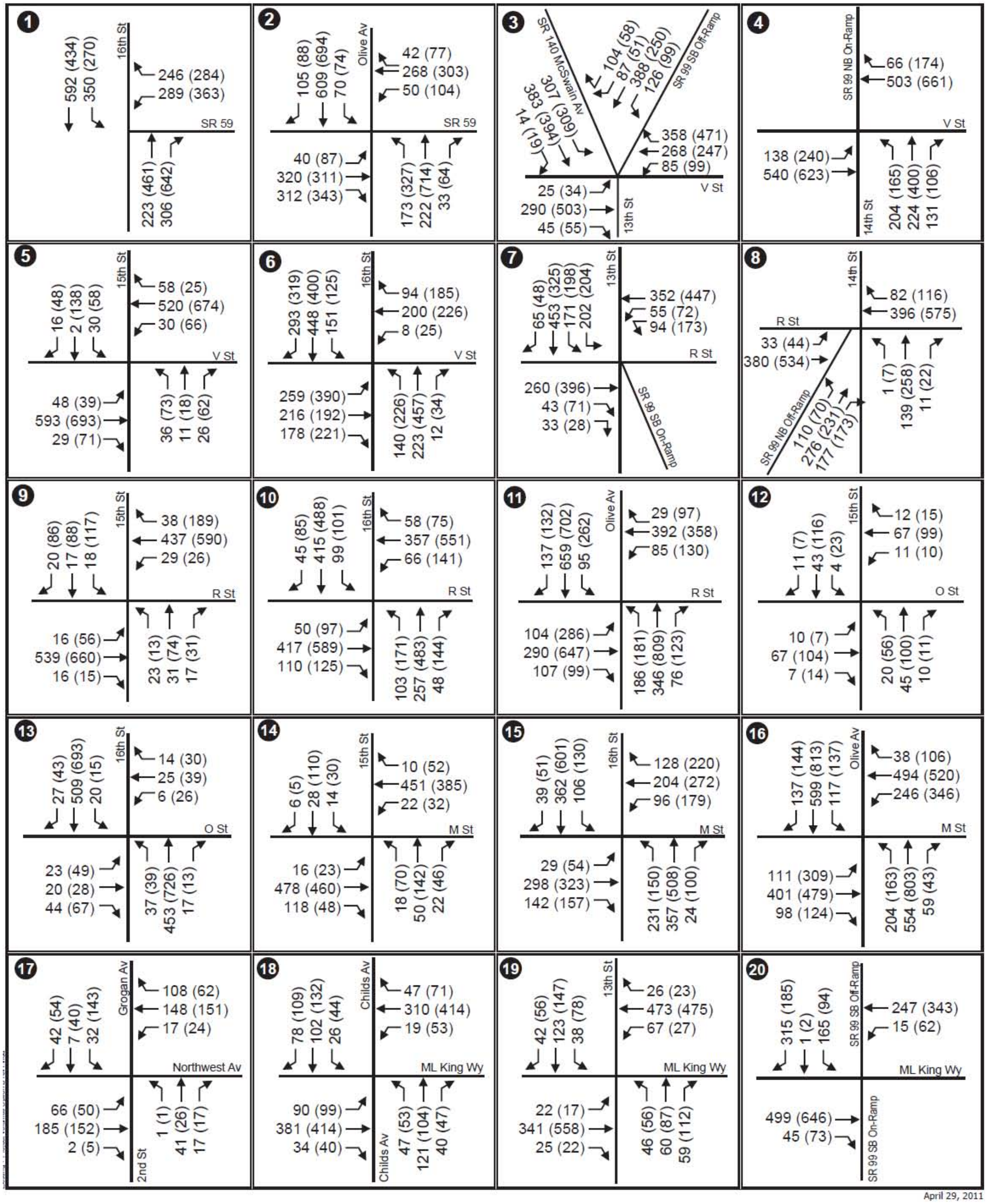
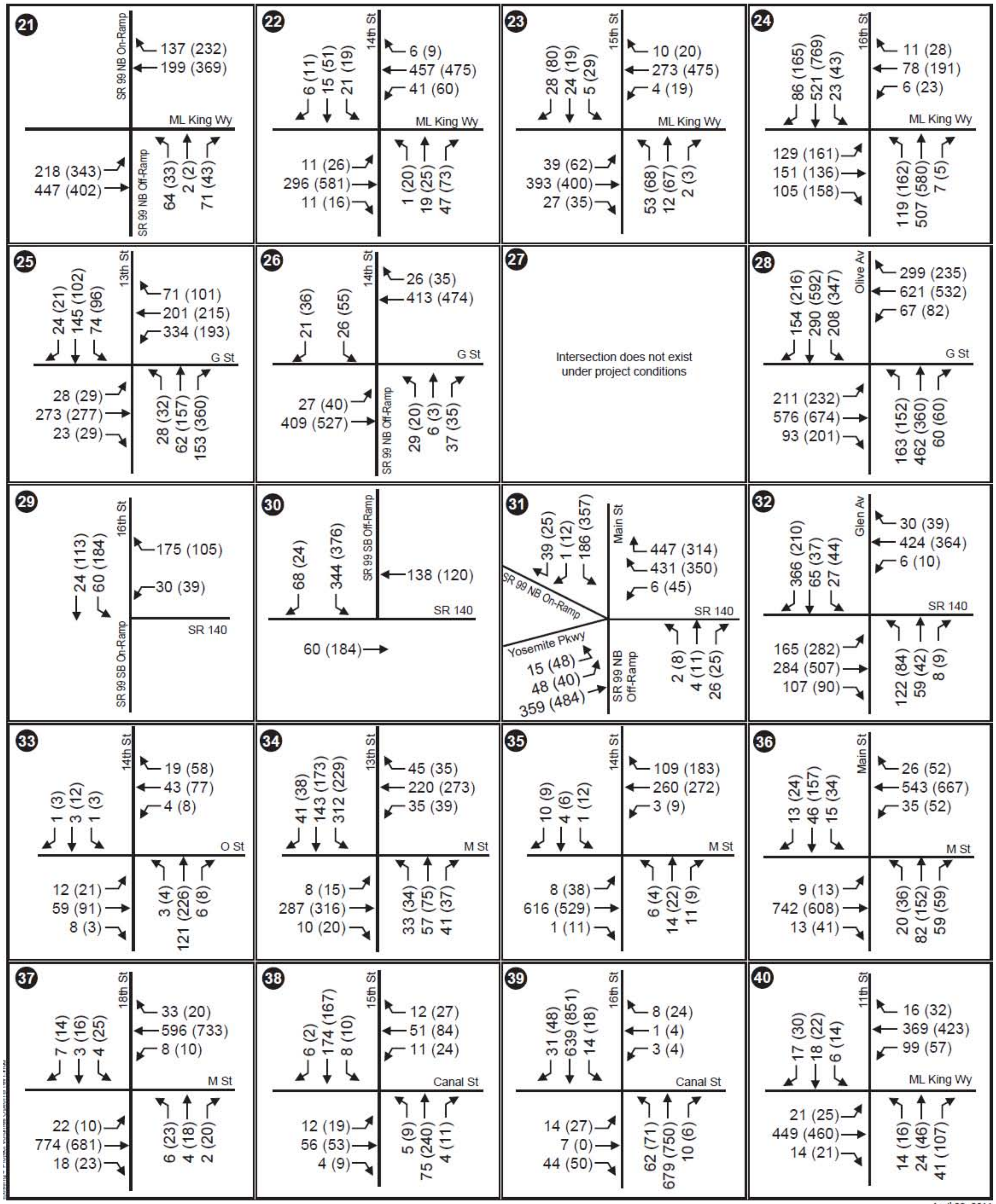


Figure 6.9-5 (a)
Existing with Project Volumes for Parking Option B – Downtown Merced Station



xx (xx) AM (PM) Peak Hour Volumes

Figure 6.9-5 (b)
Existing with Project Volumes for Parking Option B –
Downtown Merced Station

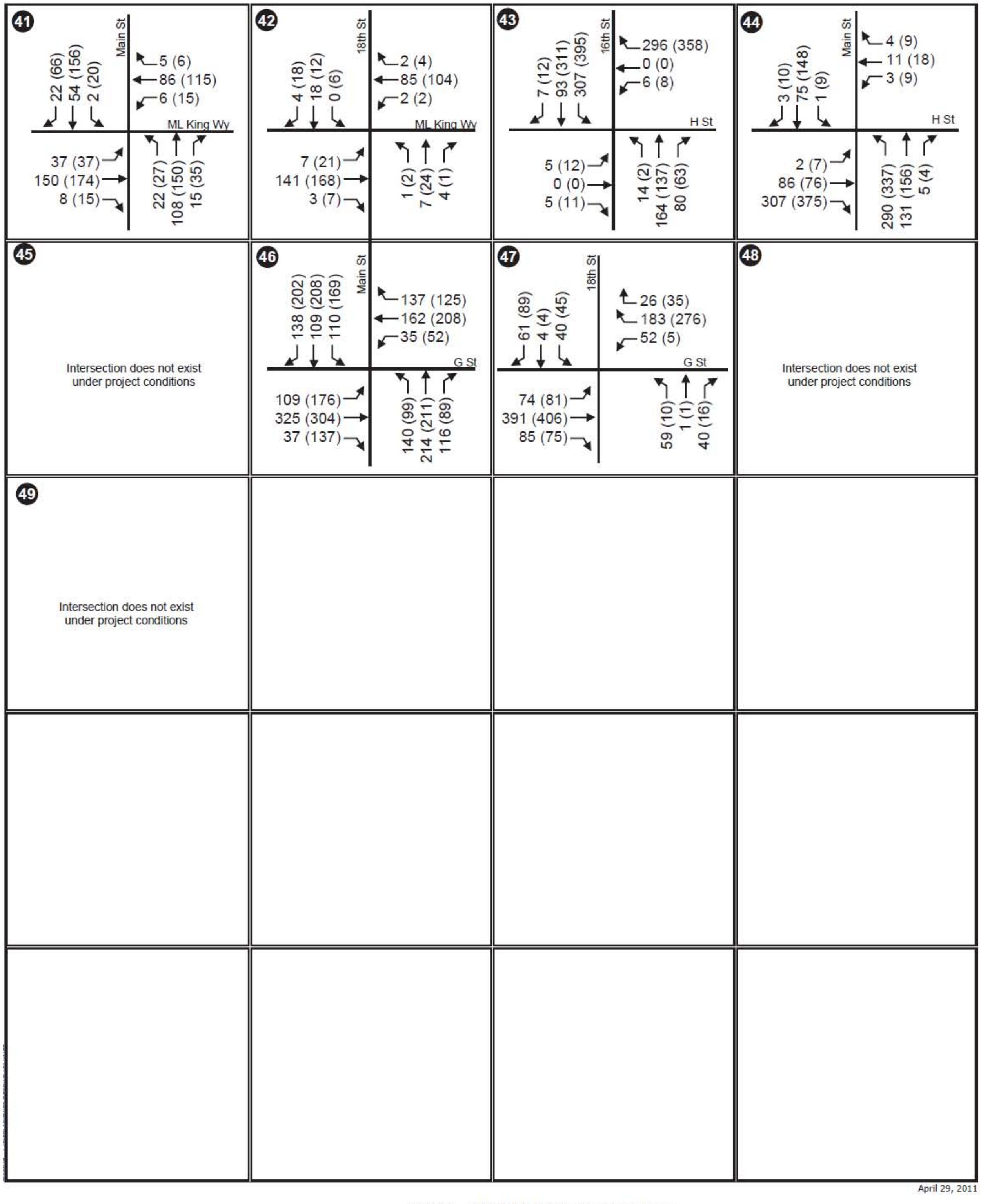


Figure 6.9-5 (c)
Existing with Project Volumes for Parking Option B – Downtown Merced Station

Table 6.9-5
Existing with Project Intersection Operating Conditions – Downtown Merced Station (Parking Option A)

		AM Peak Hour					PM Peak Hour				
		Existing		Existing plus HST			Existing		Existing plus HST		
	Intersection	LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
1	16th St/SR 59	C	16.3	C	17.0	No	F	>50	F	>50	Yes
2	Olive Ave – Santa Fe Dr/SR 59	D	35.4	D	35.4	No	D	39.4	D	39.5	No
3	13th St – SR 99 SB Off-ramp/V St	C	32.2	D	35.6	No	C	33.1	D	35.8	No
4	14th St – SR 99 NB On-ramp/V St	B	18.6	B	18.9	No	B	18.0	C	20.8	No
5	15th St/ V St	B	16.7	B	16.1	No	C	25.0	C	24.6	No
6	16th St/V St	C	21.5	C	21.8	No	C	27.0	C	28.2	No
7	13th St/R St	B	14.3	B	14.8	No	B	15.0	B	15.6	No
8	SR 99 NB Off-ramp – 14th St/R St	B	20.0	C	21.3	No	B	19.0	C	22.9	No
9	15th St/R St	B	17.1	B	16.5	No	C	25.2	C	24.9	No
10	16th St/R St	C	31.8	C	32.2	No	C	33.7	C	33.9	No
11	Olive Ave/R St	D	50.9	D	50.9	No	E	56.2	E	56.2	No
12	15th St/O St	A	7.6	A	7.9	No	A	8.5	A	8.9	No
13	16th St/ O St	C	21.1	B	19.1	No	B	19.8	B	18.5	No
14	15th St/M St	B	11.0	E	45.6	Yes	B	12.7	F	>50	Yes
15	16th St/M St	C	32.9	C	34.9	No	C	33.7	D	35.1	No
16	Olive Ave/M St	D	54.5	D	54.5	No	E	58.6	E	58.6	No
17	2nd St/Grogan Ave/Northwest Ave	A	9.8	A	9.8	No	B	10.0	B	10.0	No
18	Childs Ave/Martin Luther King Jr. Way	D	39.2	D	38.3	No	D	41.2	D	40.8	No
19	13th St/Martin Luther King Jr. Way	C	25.7	C	27.0	No	C	27.4	C	28.8	No
20	SR 99 SB Ramps/Martin Luther King Jr. Way	C	17.2	D	28.1	No	C	17.5	C	20.5	No

	Intersection	AM Peak Hour					PM Peak Hour				
		Existing		Existing plus HST			Existing		Existing plus HST		
		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
21	SR 99 NB Ramps/Martin Luther King Jr. Way	C	19.8	C	23.8	No	C	21.3	D	25.5	No
22	14th St/Martin Luther King Jr. Way	C	16.6	C	22.1	No	C	21.8	E	37.8	Yes
23	15th St/Martin Luther King Jr. Way	B	12.4	B	11.0	No	B	14.8	B	14.0	No
24	16th St/Martin Luther King Jr. Way	C	29.1	C	29.0	No	C	31.2	C	33.7	No
25	13th St/G St	B	12.9	E	37.2	Yes	C	15.4	F	>50	Yes
26	SR 99 – 14th St/G St	B	15.0	C	17.7	No	C	17.5	C	21.7	No
27	16th St/G St[a]	C	31.4	NA	NA	No	C	32.8	NA	NA	No
28	Olive Ave/ G St	D	46.8	D	46.8	No	D	48.0	D	48.0	No
29	SR 99 SB On-ramp/SR 140	B	12.9	A	9.5	No	D	32.3	B	13.0	No
30	SR 99 SB Off-ramp/SR 140	E	43.9	B	13.9	No	F	>50	C	16.9	No
31	SR 99 NB Off-ramp/Yosemite Pkwy	F	>50	F	>50	No	F	>50	F	>50	Yes
32	Motel Dr/Glen Ave/Yosemite Pkwy (SR 140)	D	42.6	D	45.0	No	D	36.9	D	38.8	No
33	14th St/O St	A	9.7	B	11.1	No	B	10.8	C	16.7	No
34	13th St/M St	B	12.7	D	27.6	No	C	15.8	D	25.6	No
35	14th St/M St	B	13.7	C	17.7	No	C	15.5	C	23.1	No
36	Main St/M St	A	9.7	A	9.6	No	B	13.2	B	13.1	No
37	18th St/M St	B	12.2	B	12.2	No	B	13.5	B	13.8	No
38	15th St/Canal St	B	10.3	B	14.9	No	B	12.3	C	22.1	No
39	16th St/Canal St	C	22.2	E	37.3	Yes	E	36.7	F	>50	No
40	11th St/Martin Luther King Jr. Way	C	16.8	C	17.6	No	C	21.0	C	21.9	No

	Intersection	AM Peak Hour					PM Peak Hour				
		Existing		Existing plus HST			Existing		Existing plus HST		
		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
41	Main St/Martin Luther King Jr. Way	A	9.5	A	9.5	No	A	9.9	A	9.9	No
42	18th St/Martin Luther King Jr. Way	A	7.7	A	7.7	No	A	8.0	A	8.1	No
43	16th St/H St[b]	B	11.5	C	6.5	No	B	14.4	C	24.1	No
44	Main St/H St	A	10	C	21.1	No	B	10.9	E	41.5	Yes
45	15th St/G St[a]	B	13.4	NA	NA	No	C	16.7	NA	NA	No
46	Main St/G St	B	16.8	C	20.8	No	C	20.1	C	24.9	No
47	18th St/G St	A	8.5	A	9.9	No	A	4.5	B	11.2	No
48	15th St/D St[c]	B	14.3	NA	NA	No	B	11.5	NA	NA	No
49	16th St/D St[c]	C	16.4	NA	NA	No	C	16.7	NA	NA	No

Notes:
[a] Intersection does not exist under project conditions because of proposed G Street overpass
[b] Intersection signalized under project conditions
[c] Intersection does not exist under project conditions because of proposed D Street closure
Intersections with impacts are highlighted.

Table 6.9-6
Existing with Project Intersection Operating Conditions – Downtown Merced Station (Parking Option B)

	Intersection	AM Peak Hour					PM Peak Hour				
		Existing		Existing plus HST			Existing		Existing plus HST		
		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
1	16th St/SR 59	C	16.3	C	17.0	No	F	>50	F	>50	Yes
2	Olive Ave – Santa Fe Dr/SR 59	D	35.4	D	35.4	No	D	39.4	D	39.5	No
3	13th St – SR 99 SB Off-ramp/V St	C	32.2	D	36.4	No	C	33.1	D	36.7	No
4	14th St – SR 99 NB On-ramp/V St	B	18.6	B	18.8	No	B	18.0	C	20.9	No
5	15th St/ V St	B	16.7	B	15.8	No	C	25.0	C	24.3	No
6	16th St/V St	C	21.5	C	22.1	No	C	27.0	C	28.7	No

		AM Peak Hour					PM Peak Hour				
		Existing		Existing plus HST			Existing		Existing plus HST		
	Intersection	LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
7	13th St/R St	B	14.3	B	14.8	No	B	15.0	B	15.6	No
8	SR 99 NB Off-ramp – 14th St/R St	B	20.0	C	21.2	No	B	19.0	C	21.9	No
9	15th St/R St	B	17.1	B	16.8	No	C	25.2	C	24.9	No
10	16th St/R St	C	31.8	C	32.2	No	C	33.7	C	33.9	No
11	Olive Ave/R St	D	50.9	D	50.9	No	E	56.2	E	56.2	No
12	15th St/O St	A	7.6	A	7.7	No	A	8.5	A	8.8	No
13	16th St/ O St	C	21.1	B	19.0	No	B	19.8	B	18.4	No
14	15th St/M St	B	11.0	C	21.1	No	B	12.7	D	32.0	No
15	16th St/M St	C	32.9	C	34.8	No	C	33.7	C	35.0	No
16	Olive Ave/M St	D	54.5	D	54.5	No	E	58.6	E	58.6	No
17	2nd St/Grogan Ave/Northwest Ave	A	9.8	A	10.0	No	B	10.0	B	10.6	No
18	Childs Ave/Martin Luther King Jr. Way	D	39.2	D	38.8	No	D	41.2	D	41.6	No
19	13th St/Martin Luther King Jr. Way	C	25.7	C	26.2	No	C	27.4	C	28.1	No
20	SR 99 SB Ramps/Martin Luther King Jr. Way	C	17.2	C	21.0	No	C	17.5	C	19.1	No
21	SR 99 NB Ramps/Martin Luther King Jr. Way	C	19.8	C	22.4	No	C	21.3	D	31.2	No
22	14th St/Martin Luther King Jr. Way	C	16.6	C	18.6	No	C	21.8	E	40.6	Yes
23	15th St/Martin Luther King Jr. Way	B	12.4	B	11.5	No	B	14.8	B	14.5	No
24	16th St/Martin Luther King Jr. Way	C	29.1	C	29.0	No	C	31.2	C	33.7	No
25	13th St/G St	B	12.9	E	41.6	Yes	C	15.4	F	>50	Yes
26	SR 99 – 14th St/G St	B	15.0	B	17.6	No	C	17.5	C	22.0	No
27	16th St/G St[a]	C	31.4	NA	NA	No	C	32.8	NA	NA	No
28	Olive Ave/ G St	D	46.8	D	46.8	No	D	48.0	D	48.0	No
29	SR 99 SB On-ramp/SR 140	B	12.9	A	9.5	No	D	32.3	B	12.8	No
30	SR 99 SB Off-ramp/SR 140	E	43.9	B	13.7	No	F	>50	C	16.6	No
31	SR 99 NB Off-ramp/Yosemite Pkwy	F	>50	F	>50	No	F	>50	F	>50	Yes

	Intersection	AM Peak Hour					PM Peak Hour				
		Existing		Existing plus HST			Existing		Existing plus HST		
		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
32	Motel Dr/Glen Ave/Yosemite Pkwy (SR 140)	D	42.6	D	45.0	No	D	36.9	D	38.8	No
33	14th St/O St	A	9.7	B	10.9	No	B	10.8	B	14.3	No
34	13th St/M St	B	12.7	D	27.0	No	C	15.8	D	25.1	No
35	14th St/M St	B	13.7	C	18.8	No	C	15.5	C	21.6	No
36	Main St/M St	A	9.7	A	9.6	No	B	13.2	B	13.1	No
37	18th St/M St	B	12.2	B	12.3	No	B	13.5	B	13.8	No
38	15th St/Canal St	B	10.3	B	11.7	No	B	12.3	B	14.5	No
39	16th St/Canal St	C	22.2	E	37.2	Yes	E	36.7	F	>50	No
40	11th St/Martin Luther King Jr. Way	C	16.8	C	19.8	No	C	21.0	C	21.9	No
41	Main St/Martin Luther King Jr. Way	A	9.5	A	9.5	No	A	9.9	A	9.9	No
42	18th St/Martin Luther King Jr. Way	A	7.7	A	7.7	No	A	8.0	A	8.1	No
43	16th St/H St[b]	B	11.5	C	6.5	No	B	14.4	C	24.1	No
44	Main St/H St	A	10	C	21.3	No	B	10.9	E	42.5	Yes
45	15th St/G St[a]	B	13.4	NA	NA	No	C	16.7	NA	NA	No
46	Main St/G St	B	16.8	C	20.9	No	C	20.1	C	25.1	No
47	18th St/G St	A	8.5	A	9.9	No	A	4.5	B	11.2	No
48	15th St/D St[c]	B	14.3	NA	NA	No	B	11.5	NA	NA	No
49	16th St/D St[c]	C	16.4	NA	NA	No	C	16.7	NA	NA	No

Notes:

[a] Intersection does not exist under project conditions because of proposed G Street overpass

[b] Intersection signalized under project conditions

[c] Intersection does not exist under project conditions because of proposed D Street closure

Intersections with impacts are highlighted.

6.9.3.2 Future Year (2035) Plus Project Conditions

Based on the distribution percentages presented in Figure 6.9-3, project volumes were developed at the study intersections for both Options A and B for the AM and PM peak hour conditions. These volumes were then added to the future year (2035) No Project volumes to obtain future year (2035) with project volumes, which are presented in Figures 6.9-6(a) through 6.9-6(c) and Figures 6.9-7(a) through 6.9-7(c) for parking options A and B, respectively. Existing intersection geometry was used for future year with project analysis conditions because no intersection improvements were identified in the City General Plan.

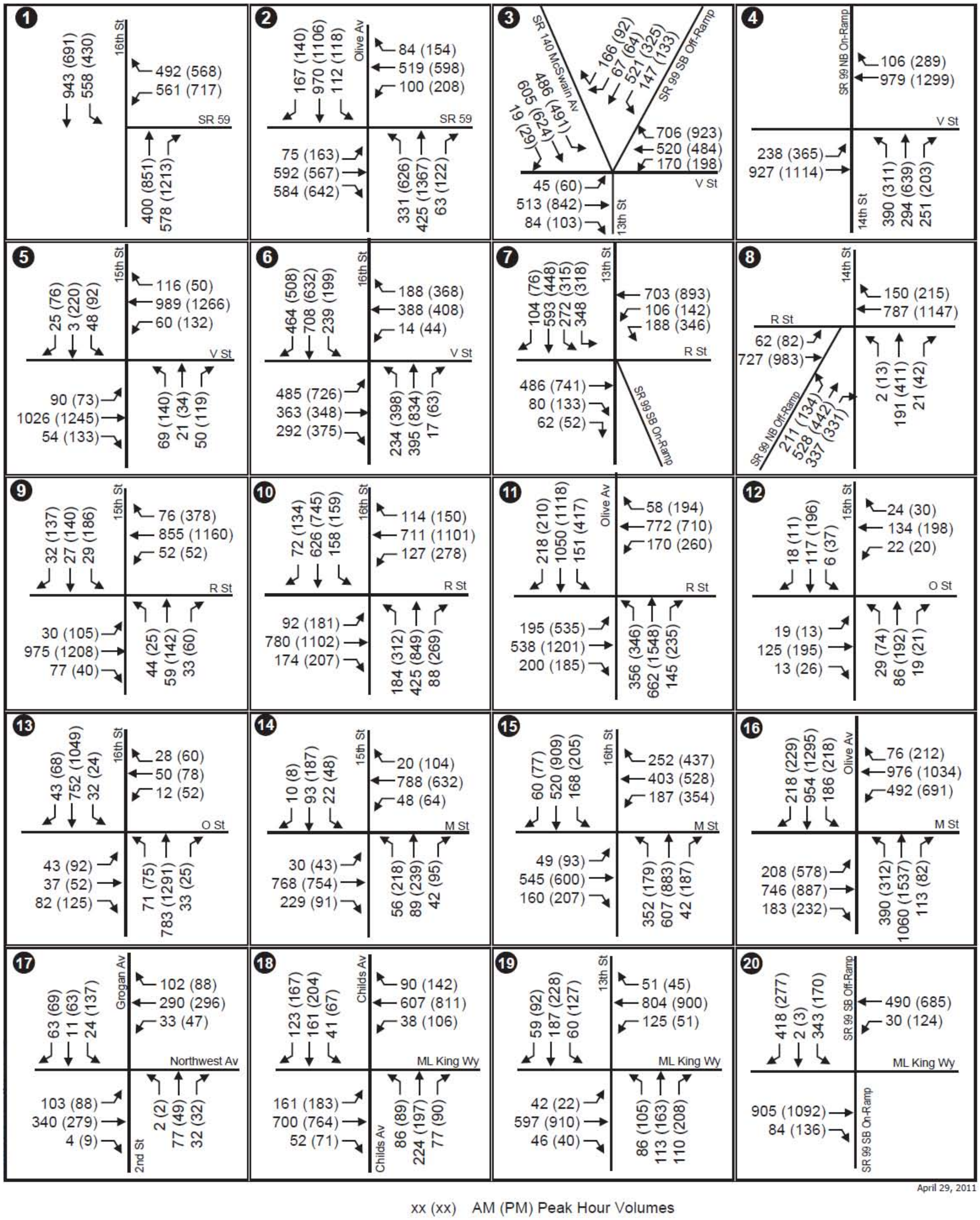


Figure 6.9-6 (a)
Future Year (2035) with Project Volumes for Parking Option A –
Downtown Merced Station

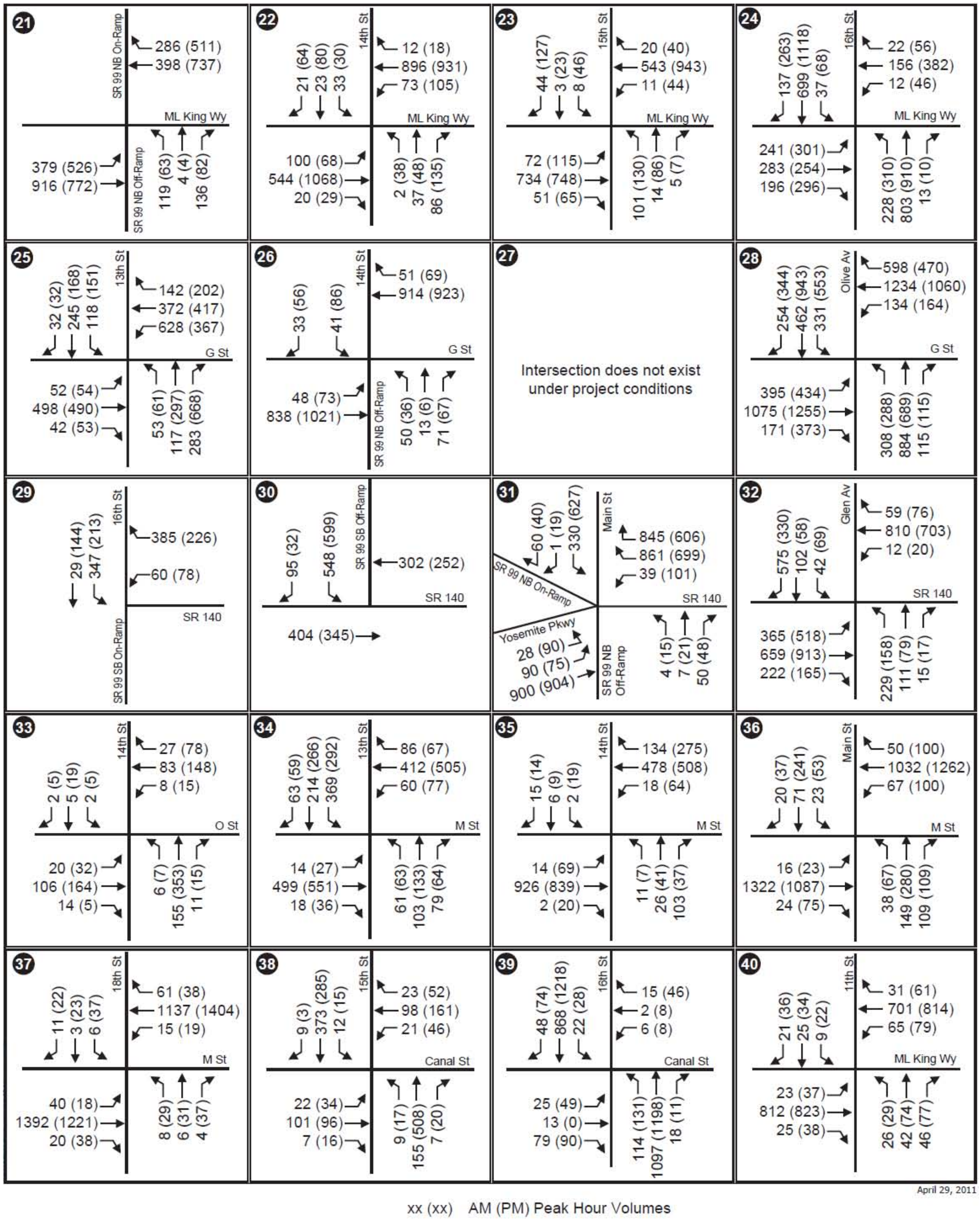


Figure 6.9-6 (b)
Future Year (2035) with Project Volumes for Parking Option A – Downtown Merced Station

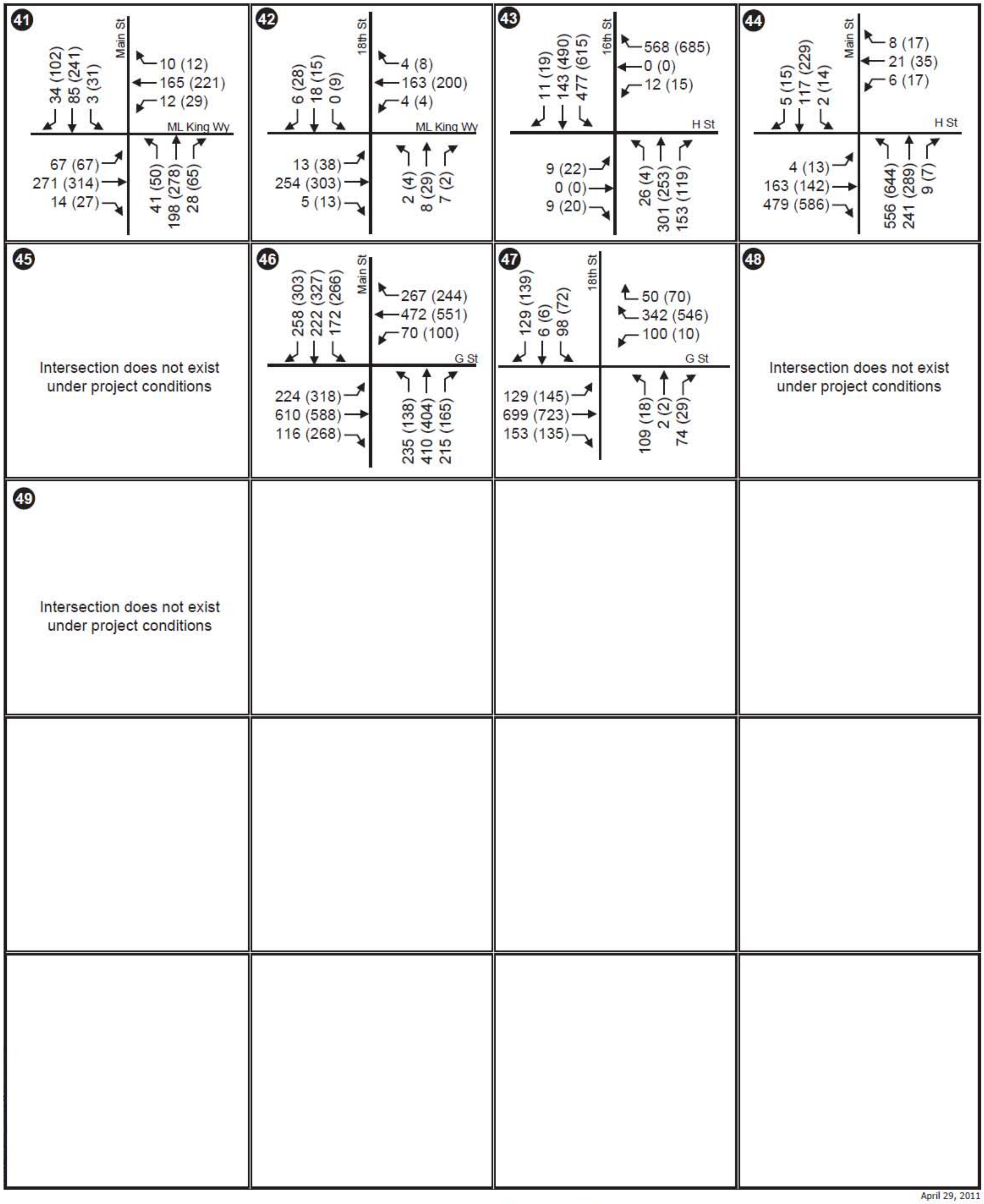
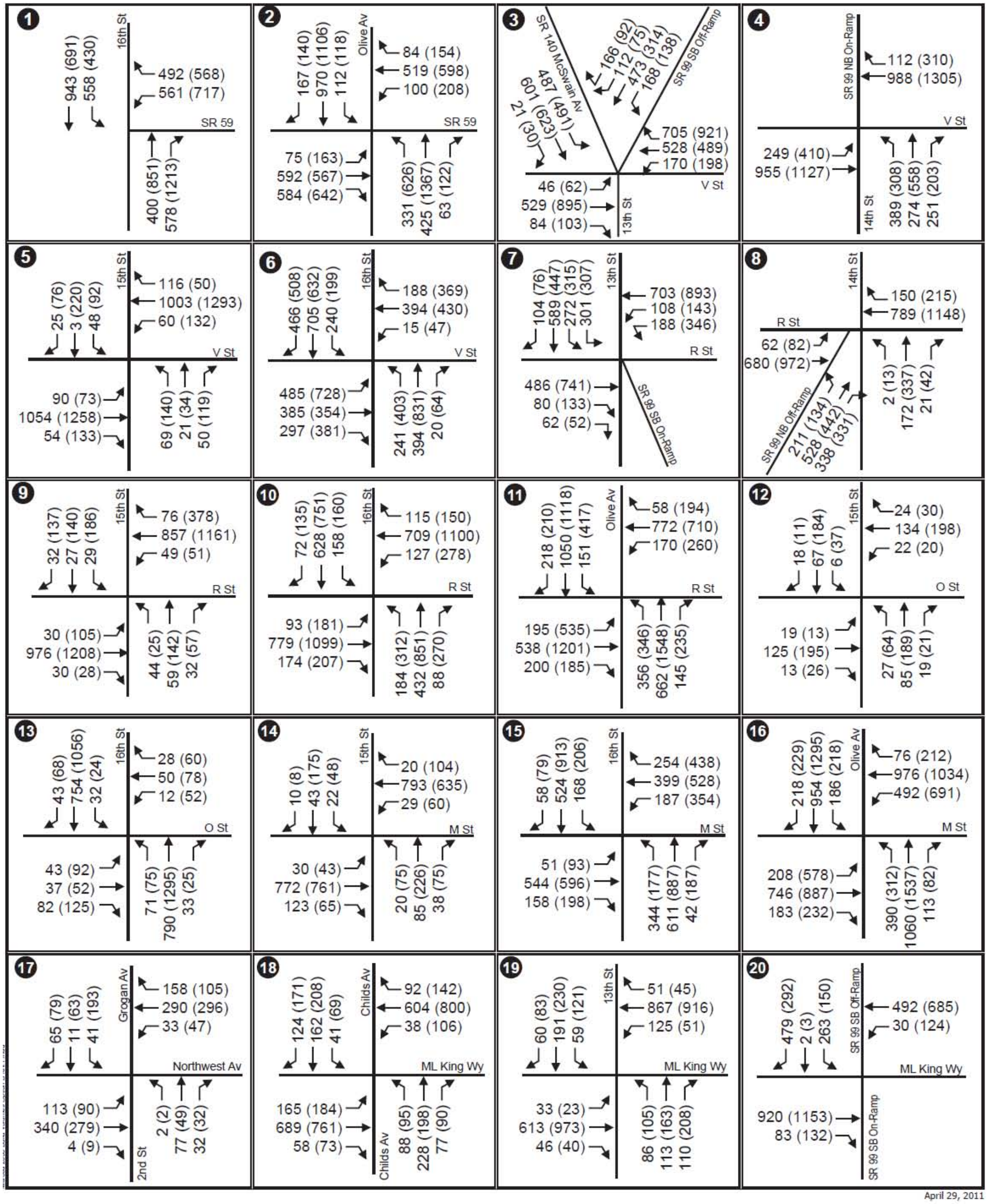


Figure 6.9-6 (c)
Future Year (2035) with Project Volumes for Parking Option A – Downtown Merced Station



xx (xx) AM (PM) Peak Hour Volumes

Figure 6.9-7 (a)
Future Year (2035) with Project Volumes for Parking Option B – Downtown Merced Station

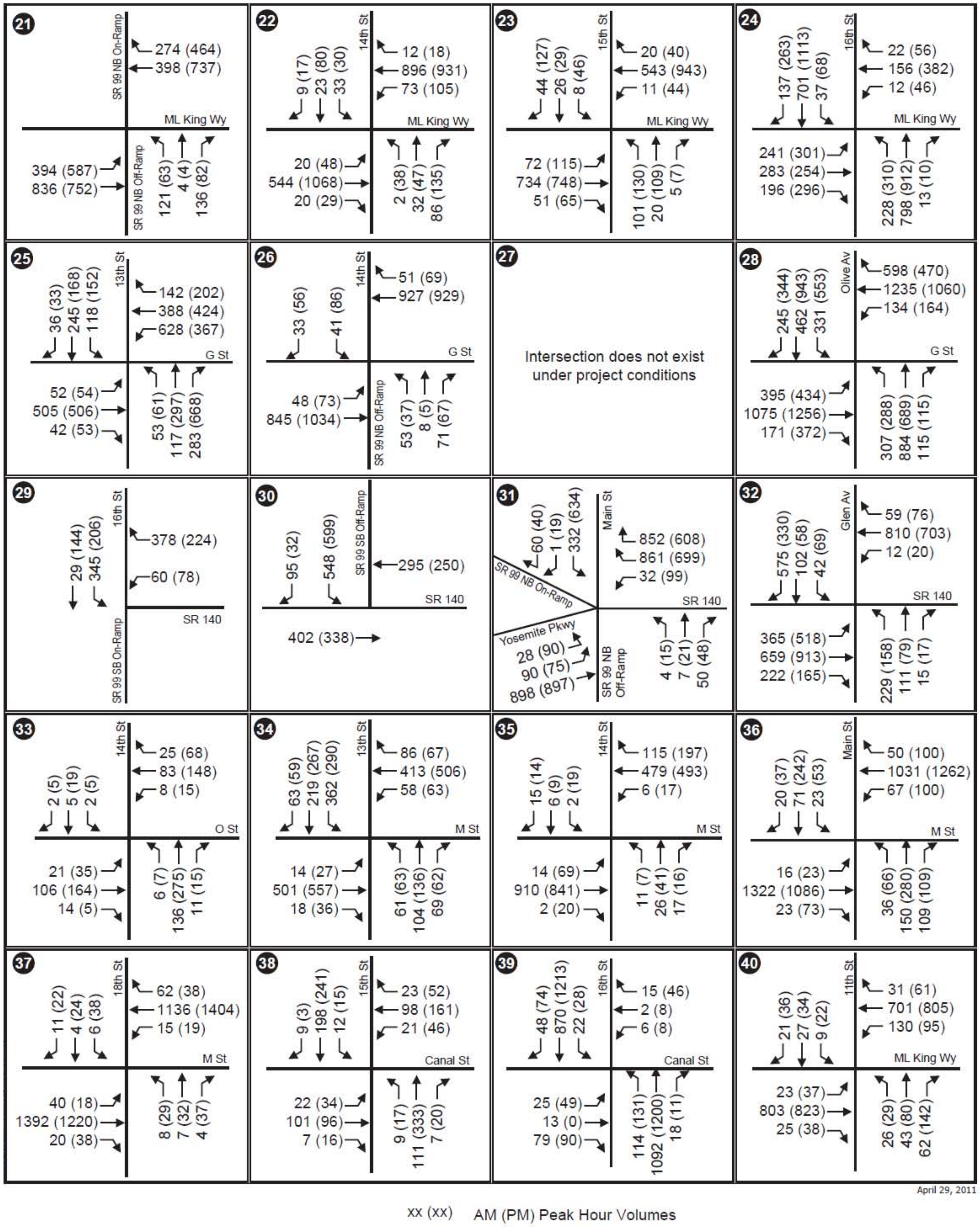


Figure 6.9-7 (b)
Future Year (2035) with Project Volumes for Parking Option B –
Downtown Merced Station

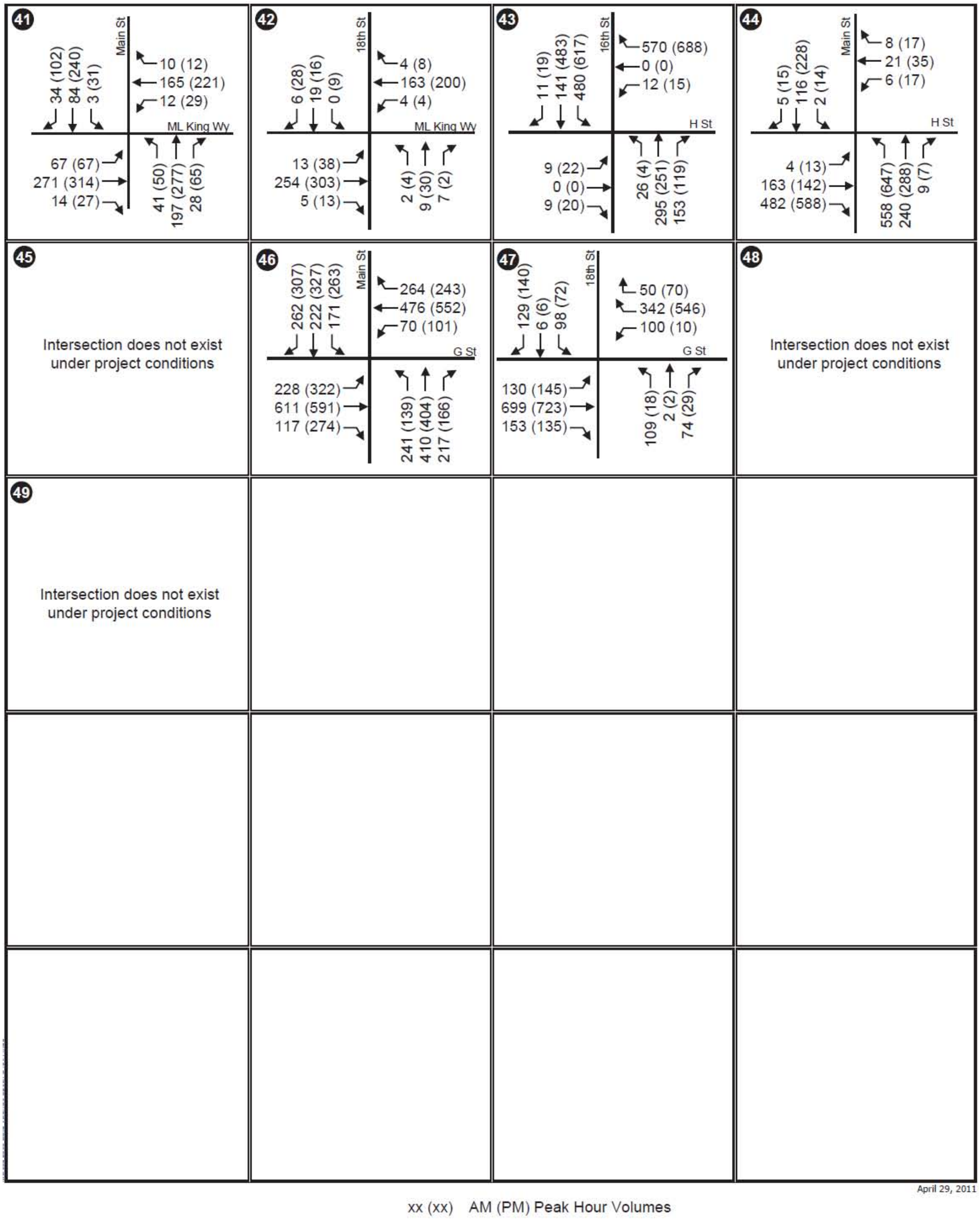


Figure 6.9-7 (c)
Future Year (2035) with Project Volumes for Parking Option B – Downtown Merced Station

Based on the existing geometry and future year 2035 with project volumes, intersection analysis was performed for the AM and PM peak hours. The results of the analysis compared to the future year (2035) No Project conditions are presented in Table 6.9-7 for Option A and Table 6.9-8 for Option B. LOS calculation sheets for both options are presented in Appendix C.

Traffic impacts at study intersections were identified based on the Authority traffic impact criteria guidelines presented Section 6.4. Intersections with project impacts are highlighted in the tables.

It can be noted from Table 6.9-7, that for Option A, 20 intersections are impacted by the added project traffic. It can be noted from Table 6.9-8, that for Option B, 19 intersections are impacted by the added project traffic, which would result in a significant impact under CEQA and a substantial impact under NEPA. These impacted intersections are illustrated in Figures 6.9-8 and 6.9-9 for Parking Options A and B, respectively.

Table 6.9-7
Future Year (2035) with Project Intersection Operating Conditions - Downtown Merced Station (Parking Option A)

		AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 plus HST			2035 No Project		2035 plus HST		
Intersection		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
1	16th St/SR 59	F	>50	F	>50	Yes	F	>50	F	>50	Yes
2	Olive Ave – Santa Fe Dr/SR 59	E	56.2	E	56.7	No	F	131.5	F	132.8	No
3	13th St – SR 99 SB Off-ramp/V St	F	>80	F	>80	Yes	F	>80	F	>80	Yes
4	14th St – SR 99 NB On-ramp/V St	C	23.3	C	23.6	No	C	30.7	D	42.3	No
5	15th St/ V St	B	17.2	B	17.1	No	C	28.7	C	28.7	No
6	16th St/V St	E	57.6	E	59.4	No	F	>80	F	>80	Yes
7	13th St/R St	B	17.4	B	18.9	No	C	33.0	D	35.3	No
8	SR 99 NB Off-ramp – 14th St/R St	C	23.1	C	24.1	No	C	24.3	C	30.6	No
9	15th St/R St	B	16.4	B	16.2	No	C	26.5	C	26.6	No
10	16th St/R St	C	33.9	C	34.6	No	D	46.7	D	49.3	No
11	Olive Ave/R St	E	59.5	E	59.6	No	F	>80	F	>80	No
12	15th St/O St	A	8.6	A	9.0	No	B	11.5	B	12.5	No
13	16th St/ O St	C	21	C	20.1	No	C	22.1	C	21.8	No
14	15th St/M St	F	>50	F	>50	Yes	F	>50	F	>50	Yes
15	16th St/M St	D	36	D	39.6	No	D	43.8	D	52.7	No
16	Olive Ave/M St	F	>80	F	>80	No	F	>80	F	>80	No
17	2nd St/Grogan	C	16.6	C	16.6	No	C	16.9	C	16.9	No

Intersection		AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 plus HST			2035 No Project		2035 plus HST		
		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
	Ave/Northwest Ave										
18	Childs Ave/Martin Luther King Jr. Way	E	56.7	E	58.0	No	F	>80	F	>80	Yes
19	13th St/Martin Luther King Jr. Way	C	26.8	C	28.6	No	C	32.7	D	37.1	No
20	SR 99 SB Ramps/Martin Luther King Jr. Way	F	>50	F	>50	Yes	F	>50	F	>50	Yes
21	SR 99 NB Ramps/Martin Luther King Jr. Way	F	>50	F	>50	Yes	F	>50	F	>50	Yes
22	14th St/Martin Luther King Jr. Way	F	>50	F	>50	No	F	>50	F	OVFL	Yes
23	15th St/Martin Luther King Jr. Way	B	13.9	B	12.5	No	B	17.6	B	16.0	No
24	16th St/Martin Luther King Jr. Way	C	33.3	D	37.7	No	F	>80	F	>80	Yes
25	13th St/G St	F	>50	F	>50	Yes	F	>50	F	>50	Yes
26	SR 99 – 14th St/G St	E	39.6	F	>50	No	F	>50	F	>50	Yes
27	16th St/G St[a]	D	39.7	NA	NA	No	D	51.6	NA	NA	No
28	Olive Ave/ G St	F	>80	F	>80	No	F	>80	F	>80	No
29	SR 99 SB On-ramp/SR 140	C	19.6	C	18.2	No	F	>50	B	15.0	No
30	SR 99 SB Off-ramp/SR 140	F	>50	F	>50	No	F	>50	F	>50	No
31	SR 99 NB Off-ramp/Yosemite Pkwy	F	>50	F	>50	Yes	F	OVFL	F	OVFL	Yes
32	Motel Dr/Glen Ave/Yosemite Pkwy (SR 140)	F	>80	F	>80	Yes	F	>80	F	>80	Yes
33	14th St/O St	B	10.6	B	12.7	No	B	14.0	E	35.1	Yes
34	13th St/M St	F	>50	F	>50	Yes	F	>50	F	>50	Yes
35	14th St/M St	D	26.8	F	>50	Yes	E	42.6	F	>50	No
36	Main St/M St	B	11.8	B	11.8	No	B	18.7	B	19.1	No
37	18th St/M St	B	13	B	13.1	No	B	14.4	B	14.6	No

Intersection		AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 plus HST			2035 No Project		2035 plus HST		
		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
38	15th St/Canal St	B	12.1	C	22.2	No	C	21.0	F	OVFL	Yes
39	16th St/Canal St	F	>50	F	>50	No	F	>50	F	>50	No
40	11th St/Martin Luther King Jr. Way	F	>50	F	>50	Yes	F	OVFL	F	OVFL	Yes
41	Main St/Martin Luther King Jr. Way	A	9.9	A	9.9	No	B	10.9	B	10.9	No
42	18th St/Martin Luther King Jr. Way	A	8.6	A	8.7	No	A	9.6	A	9.7	No
43	16th St/H St[b]	C	16.2	D	35.9	No	D	28.3	D	50.1	No
44	Main St/H St	B	11.2	F	OVFL	Yes	B	13.6	F	OVFL	Yes
45	15th St/G St[a]	D	27.2	NA	NA	No	F	129.0	NA	NA	No
46	Main St/G St	B	18.3	D	38.6	No	C	21.2	E	55.5	Yes
47	18th St/G St	A	9.2	B	11.3	No	A	4.5	B	11.0	No
48	15th St/D St[c]	D	32.4	NA	NA	No	C	17.5	NA	NA	No
49	16th St/D St[c]	E	39.4	NA	NA	No	E	39.3	NA	NA	No

Notes:

OVFL = Overflow

[a] Intersection does not exist under project conditions because of proposed G Street overpass

[b] Intersection signalized under project conditions

[c] Intersection does not exist under project conditions because of proposed D Street closure

Intersections with impacts are highlighted.

Table 6.9-8
Future Year (2035) with Project Intersection Operating Conditions – Downtown Merced Station (Parking Option B)

		AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 plus HST			2035 No Project		2035 plus HST		
	Intersection	LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
1	16th St/SR 59	F	>50	F	>50	Yes	F	>50	F	>50	Yes
2	Olive Ave – Santa Fe Dr/SR 59	E	56.2	E	56.7	No	F	>80	F	>80	No
3	13th St – SR 99 SB Off-ramp/V St	F	>80	F	>80	Yes	F	>80	F	>80	Yes
4	14th St – SR 99 NB On-ramp/V St	C	23.3	C	23.8	No	C	30.7	D	45.1	No
5	15th St/ V St	B	17.2	B	17.0	No	C	28.7	C	28.7	No
6	16th St/V St	E	57.6	E	61.6	Yes	F	>80	F	>80	Yes
7	13th St/R St	B	17.4	B	18.7	No	C	33.0	C	34.6	No
8	SR 99 NB Off-ramp – 14th St/R St	C	23.1	C	23.8	No	C	24.3	C	28.2	No
9	15th St/R St	B	16.4	B	16.3	No	C	26.5	C	26.6	No
10	16th St/R St	C	33.9	C	34.6	No	D	46.7	D	49.5	No
11	Olive Ave/R St	E	59.5	E	59.6	No	F	>80	F	>80	No
12	15th St/O St	A	8.6	A	8.7	No	B	11.5	B	12.2	No
13	16th St/ O St	C	21	C	20.0	No	C	22.1	C	21.8	No
14	15th St/M St	F	>50	F	>50	Yes	F	>50	F	>50	Yes
15	16th St/M St	D	36	D	39.5	No	D	43.8	D	52.3	No
16	Olive Ave/M St	F	>80	F	>80	No	F	>80	F	>80	No
17	2nd St/Grogan Ave/Northwest Ave	C	16.6	C	17.5	No	C	16.9	C	18.7	No
18	Childs Ave/Martin Luther King Jr. Way	E	56.7	E	59.0	No	F	>80	F	>80	Yes
19	13th St/Martin Luther King Jr. Way	C	26.8	C	28.4	No	C	32.7	D	37.0	No

Intersection		AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 plus HST			2035 No Project		2035 plus HST		
		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
20	SR 99 SB Ramps/Martin Luther King Jr. Way	F	>50	F	>50	Yes	F	>50	F	>50	Yes
21	SR 99 NB Ramps/Martin Luther King Jr. Way	F	>50	F	>50	Yes	F	>50	F	OVFL	Yes
22	14th St/Martin Luther King Jr. Way	F	>50	F	>50	No	F	>50	F	OVFL	Yes
23	15th St/Martin Luther King Jr. Way	B	13.9	B	12.7	No	B	17.6	B	16.5	No
24	16th St/Martin Luther King Jr. Way	C	33.3	D	37.6	No	F	>80	F	>80	Yes
25	13th St/G St	F	>50	F	>50	Yes	F	>50	F	>50	Yes
26	SR 99 – 14th St/G St	E	39.6	F	>50	No	F	>50	F	>50	Yes
27	16th St/G St[a]	D	39.7	NA	NA	No	D	51.6	NA	NA	No
28	Olive Ave/ G St	F	>80	F	>80	No	F	>80	F	>80	No
29	SR 99 SB On-ramp/SR 140	C	19.6	C	18.1	No	F	>50	B	14.7	No
30	SR 99 SB Off-ramp/SR 140	F	886.1	F	>50	No	F	>50	F	>50	No
31	SR 99 NB Off-ramp/Yosemite Pkwy	F	>50	F	>50	Yes	F	OVFL	F	OVFL	Yes
32	Motel Dr/Glen Ave/Yosemite Pkwy (SR 140)	F	>80	F	268.2	Yes	F	>80	F	>80	Yes
33	14th St/O St	B	10.6	B	12.4	No	B	14.0	C	23.9	No
34	13th St/M St	F	>50	F	>50	Yes	F	>50	F	>50	Yes
35	14th St/M St	D	26.8	E	47.8	Yes	E	42.6	F	>50	No
36	Main St/M St	B	11.8	B	11.8	No	B	18.7	B	18.9	No
37	18th St/M St	B	13	B	13.1	No	B	14.4	B	14.6	No
38	15th St/Canal St	B	12.1	B	14.5	No	C	21.0	E	38.6	Yes
39	16th St/Canal St	F	>50	F	>50	No	F	>50	F	>50	No

		AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 plus HST			2035 No Project		2035 plus HST		
Intersection		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
40	11th St/Martin Luther King Jr. Way	F	>50	F	>50	Yes	F	OVFL	F	OVFL	Yes
41	Main St/Martin Luther King Jr. Way	A	9.9	A	9.9	No	B	10.9	B	10.9	No
42	18th St/Martin Luther King Jr. Way	A	8.6	A	8.7	No	A	9.6	A	9.8	No
43	16th St/H St[b]	C	16.2	D	36.0	No	D	28.3	D	50.6	No
44	Main St/H St	B	11.2	F	OVFL	Yes	B	13.6	F	OVFL	Yes
45	15th St/G St[a]	D	27.2	NA	NA	No	F	>50	NA	NA	No
46	Main St/G St	B	18.3	D	39.8	No	C	21.2	E	56.7	Yes
47	18th St/G St	A	9.2	B	11.3	No	A	4.5	B	11.1	No
48	15th St/D St[c]	D	32.4	NA	NA	No	C	17.5	NA	NA	No
49	16th St/D St[c]	E	39.4	NA	NA	No	E	39.3	NA	NA	No

Notes:

OVFL = Overflow

[a] Intersection does not exist under project conditions because of proposed G Street overpass

[b] Intersection signalized under project conditions

[c] Intersection does not exist under project conditions because of proposed D Street closure

Intersections with impacts are highlighted.

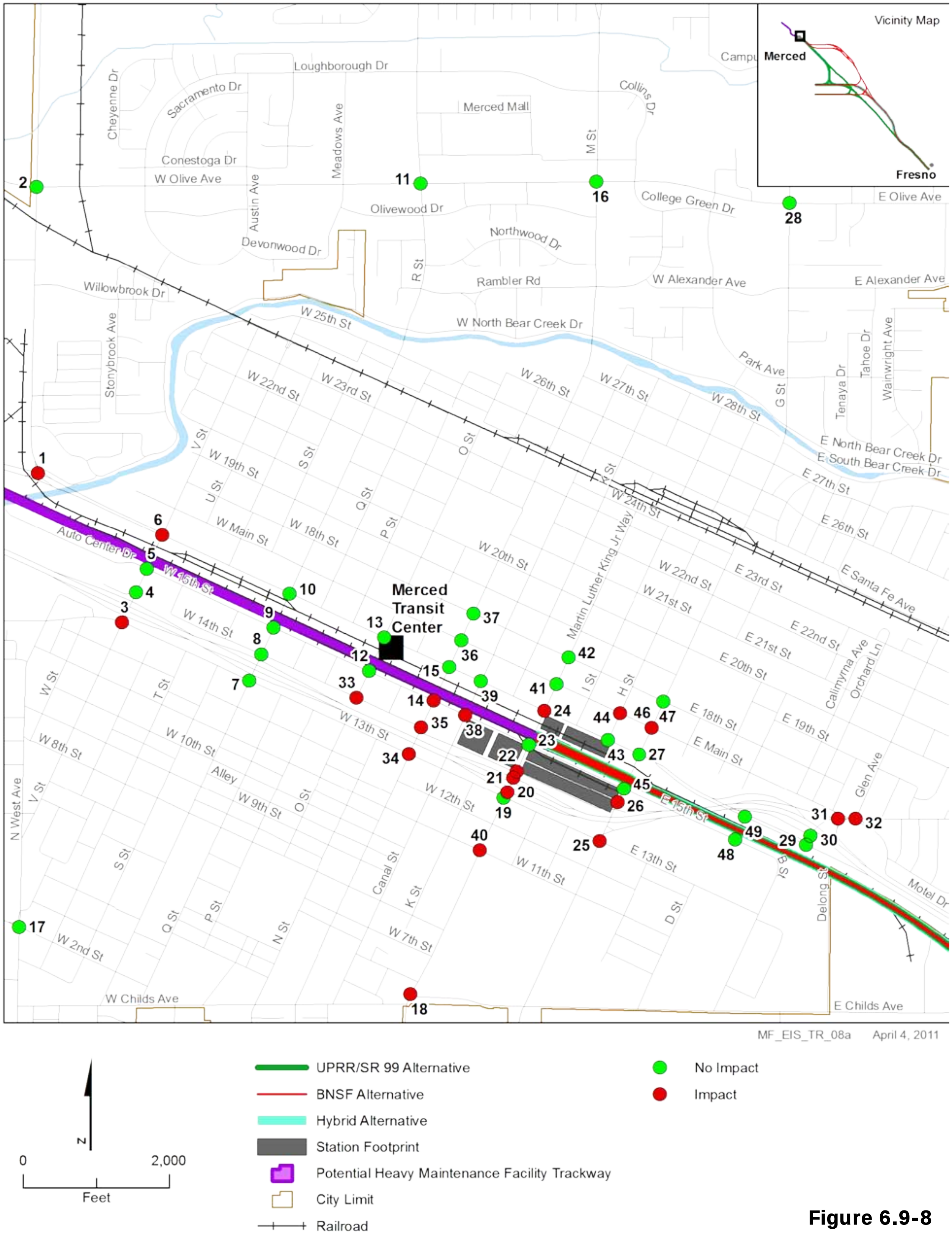


Figure 6.9-8
Future Year (2035) Project Intersection LOS with Proposed Downtown Merced Station – Parking Option A

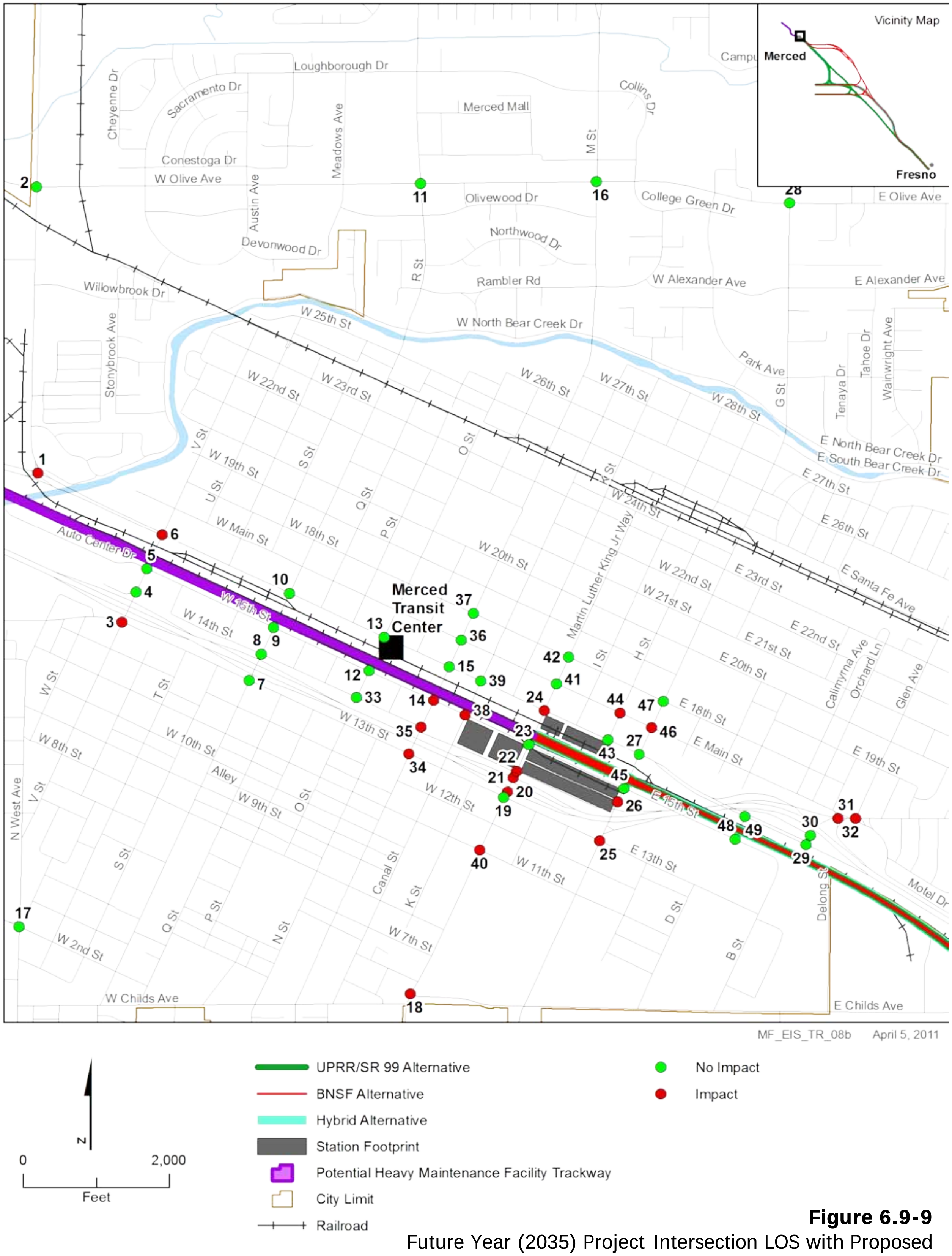


Figure 6.9-9
Future Year (2035) Project Intersection LOS with Proposed Downtown Merced Station – Parking Option B

6.9.4 Merced Area Transit Impacts

At the Downtown Merced Station, the proposed project would add approximately 600 daily passengers to transit service in the City of Merced. It is projected that approximately 70 passengers would use the transit service in the peak hours.

Eleven transit routes currently serve the Merced station area. The addition of approximately 70 passengers on existing transit routes averages to less than 7 passengers on each route (assuming equal distribution). Existing and planned transit facilities serving the vicinity of the proposed Merced HST station are expected to be adequate to meet the project demand in 2035. This would be a negligible impact on transit under NEPA and a less than significant impact under CEQA.

6.9.5 Merced Area Pedestrian and Bicycle Impacts

The proposed G Street overpass would close the current pedestrian crossing between 15th and 16th Streets, across UPRR. A new pedestrian overcrossing is proposed to provide alternative access. Other than as described below, the proposed project would not close any of the existing or planned bicycle routes or pedestrian access/routes in the immediate vicinity of the Merced station. An estimated 300 passengers would use the station area via walking/bike on a daily basis. Approximately 40 passengers during the peak hour would arrive or leave the station area either walking or on bike. A typical pedestrian sidewalk can accommodate approximately 1,000 persons per hour, based on the HCM. This would be a negligible impact under NEPA and a less than significant impact under CEQA.

The station would include bike racks, pedestrian connections to the existing sidewalks, and bike lanes/facilities where they can be accommodated within the streets. Existing and planned pedestrian and bicycle facilities serving the vicinity of the proposed Merced HST station are expected to adequately meet the project demand in 2035.The addition of these pedestrian and bike trips during the peak hour (an average of about one pedestrian/bike per one minute) in the Merced station area would result in a negligible impact on pedestrian/bike facilities under NEPA and a less than significant impact under CEQA.

Because of the proposed at-grade HST alignment in the vicinity of the Merced station, D Street would be closed across the tracks, thus restricting pedestrian and bike movements. Since there are no adjacent parallel streets that provide a similar connection (as D Street) between the areas to the east and west of SR 99 within a reasonable walking distance, the closure of D Street would be a substantial impact under NEPA and a significant impact under CEQA.

6.9.6 Merced Area Parking Impacts

Because the HST project includes a plan to provide adequate station parking (and because such parking can be provided), there would be a negligible impact under NEPA and a less than significant impact under CEQA to the existing downtown parking conditions.

6.9.7 Merced Area Freight Impacts

Because the proposed HST service would operate on a separate right-of-way through the Merced station area, it would not create any conflicts or impacts on UPRR freight operations. Pedestrian structures may cross over the freight rail line to provide access to the HST station, but the structures would be designed to meet freight height clearances. Because there would be no conflicts with freight operations, this would be a negligible impact under NEPA and a less than significant impact under CEQA. UPRR would also benefit from the G Street overpass and the D Street closure, which would eliminate current at-grade crossings.

6.10 Impacts on the Local Roadway Network due to Station Activity – All Alternatives: Fresno Station

6.10.1 Fresno Area Trip Distribution and Assignment

Two station locations in Fresno were studied named Mariposa Alternative and Kern Alternative. The Mariposa Alternative is centered on Mariposa Street and bounded by Fresno, Tulare, H and G Streets. The Kern Alternative is centered on Kern Street between Tulare and Inyo Streets. Because these two station alternatives are close to each other, the travel patterns to and from either station essentially would be the same; therefore, this document summarizes the traffic impacts for the two alternatives together. The Fresno Station option would require closure of Divisadero Street, Kern Street, and Mono Street at the proposed HST and UPRR alignment.

The forecasted daily trips for the station alternatives were distributed on the transportation network based on (1) the results of the travel demand model and (2) access to and from the proposed station areas. Parking needed for 2035 (7,400 spaces) would be provided in the vicinity of the station location. The trip distribution around the Downtown Fresno Station is presented in Figure 6.10-1. Project-generated trips were assigned to the routes shown on the trip distribution figure.

6.10.2 Fresno Area Roadway Impacts

6.10.2.1 Existing Plus Project Conditions

Based on the trip distribution, project trips were assigned to the roadway segments. These trips were then added to the existing roadway volumes to arrive at the existing plus project roadway volumes. Roadway segment used traffic impact criteria set forth earlier in this section. Table 6.10-1 presents the LOS results for roadway segments compared to the existing conditions. It can be noted from the table that none of the segments are impacted with project traffic, resulting in a negligible impact under NEPA and a less than significant impact under CEQA.

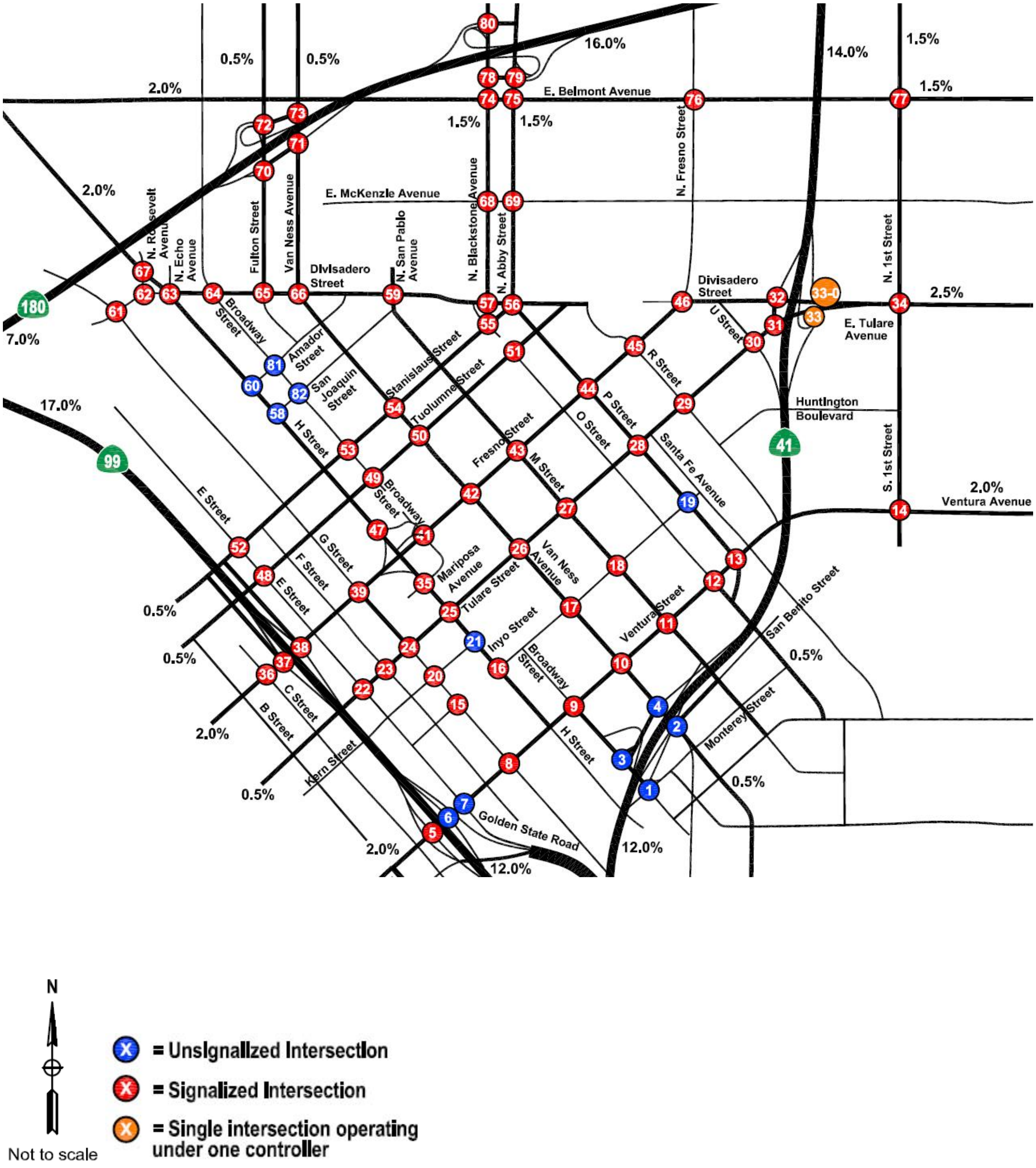


Figure 6.10-1
Trip Distribution – Fresno Station

Table 6.10-1
Existing with Project Roadway Segment Analysis for Proposed Fresno HST Station Area

No.	Roadway Segment	Number of Lanes	Divided / Undivided	Average Daily Traffic		LOS		Impact
				Existing	Existing plus HST	Existing	Existing plus HST	
1	Fulton St, between CA 180 EB Ramps and E Divisadero St	0/2	One-Way	6,970	7,120	D	D	No
2	Van Ness Ave, between CA 180 EB Ramps and E Divisadero St	2/0	One-Way	5,204	5,984	C	C	No
3	E Divisadero St, between H St and Broadway St	2/2	Undivided	9,014	9,014	C	C	No
4	H St, between E Divisadero St and Stanislaus St	1/1	Undivided	4,120	4,380	C	C	No
5	Broadway St, between San Joaquin St and Stanislaus St	1/2	Undivided	1,916	1,916	C	C	No
6	Van Ness Ave, between Stanislaus St and E Divisadero St	1/1	Undivided/ Divided	5,262	6,202	D or C	D	No
7	Stanislaus St, between Van Ness Ave, and O St	0/3	One-Way	4,360	4,700	C	C	No
8	N Blackstone Ave, between Mckenzie Ave and E Belmont Ave	0/3	One-Way	8,074	8,414	C	C	No
9	N Abby St, between Mckenzie Ave and E Belmont Ave	3/0	One-Way	9,036	9,396	C	C	No
10	E Belmont Ave, between N Fresno St and N Abby St	2/2	Divided	12,080	12,080	C	C	No
11	Stanislaus St, between Broadway St, and E St	0/2	One-Way	6,996	7,016	D or C	D or C	No
12	Tuolumne St, between Broadway St, and E St	2/0	One-Way	5,586	5,596	C	C	No

No.	Roadway Segment	Number of Lanes	Divided / Undivided	Average Daily Traffic		LOS		Impact
				Existing	Existing plus HST	Existing	Existing plus HST	
13	Tuolumne St, between Van Ness Ave and O St	3/0	One-Way	4,300	4,300	C	C	No
14	Fresno St, between P St and M St	2/2	Divided	12,322	13,132	D	D	No
15	Fresno St, between M St and Van Ness Ave	2/2	Divided	12,150	12,980	C	D	No
16	Fresno St, between Van Ness Ave and Broadway St	2/2	Divided	13,250	14,390	D	D	No
17	Fresno St, between G St and SR 99 NB Ramps	2/2	Divided	16,082	18,112	D	D	No
18	Fresno St, between C St and B St	2/2	Divided	11,860	11,990	C	C	No
19	Van Ness Ave, between Fresno St and Tulare St	2/1	Undivided	9,992	10,982	D	D	No
20	Tulare St, between Broadway St and Van Ness Ave	2/2	Divided	7,174	8,604	C	C	No
21	Tulare St, between R St and U St	2/2	Undivided	19,910	20,710	D	D	No
22	Divisadero St, between N Fresno St and SR 41 Ramps	2/2	Divided/ Undivided	20,338	23,038	D	D	No
23	Tulare St, between SR 41 Ramps and N 1st St	2/2	Divided/ Undivided	32,476	32,636	F	F	No
24	M St, between Tulare St and Inyo St	0/3	One-Way	4,000	4,050	C	C	No
25	Inyo St, between Broadway St and Van Ness Ave	1/1	Undivided	3,302	4,652	C	C	No
26	Van Ness Ave, between Inyo St and Ventura Ave	2/2	Undivided	7,586	8,506	D	D	No
27	P St, between Inyo St and Ventura Ave	3/0	One-Way	2,018	2,038	C	C	No

No.	Roadway Segment	Number of Lanes	Divided / Undivided	Average Daily Traffic		LOS		Impact
				Existing	Existing plus HST	Existing	Existing plus HST	
28	Ventura Ave, between B St and C St	2/2	Divided	13,886	14,016	D	D	No
29	Ventura Ave, between E St and G St	2/2	Divided	14,320	14,450	D	D	No
30	Broadway St, between Ventura Ave and SR 41 Ramps	1/2	Undivided	3,438	3,438	C	C	No
31	Van Ness Ave, between Ventura Ave and SR 41 Ramps	2/1	Undivided	9,346	10,166	D	D	No
32	Ventura Ave, between M St and Van Ness Ave	2/2	Divided	11,838	11,938	C	C	No
33	Ventura Ave, between P St and N First St	3/3	Undivided	11,500	11,630	D	D	No
34	N Blackstone Ave, between SR 180 EB Ramps and E Belmont Ave	0/3	One-Way	12,774	13,114	D	D	No
35	N Abby St, between SR 180 EB Ramps and E Belmont Ave	3/0	One-Way	12,906	13,266	D	D	No
36	Divisadero Street between G Street and H Street	2/1	Un-divided	7231	-	C	-	-
37	Kern Street between G Street and H Street	1/1	Un-divided	1416	-	C	-	-
38	Mono Street between G Street and H Street	1/1	Un-divided	510	-	C	-	-
39	S Railroad Ave between E Florence Ave and E Church Ave	1/1	Undivided	2,931	-	C	-	-
40	S Railroad Ave between E Church Ave and E Jensen Ave	1/1	Undivided	2,094	-	C	-	-
41	S Orange Ave between	1/1	Undivided	956	-	C	-	-

No.	Roadway Segment	Number of Lanes	Divided / Undivided	Average Daily Traffic: Existing	Average Daily Traffic: Existing plus HST	LOS: Existing	LOS: Existing plus HST	Impact
	S Railroad Ave and Golden State Blvd							

Source: Fresno to Bakersfield Transportation Technical Report, Authority & FRA 2011.

Note: LOS is based on Florida Tables.

Acronyms:
ADT = Average Daily Traffic; LOS = level of service; N/E = northeast; SR = State Route; S/W = southwest

6.10.2.2 Future Year (2035) Plus Project Conditions

Based on the trip distribution, project trips were assigned to the roadway segments. These trips were then added to the future year (2035) No Project roadway volumes to arrive at the future year (2035) plus project roadway volumes. Roadway segment used traffic impact criteria set forth earlier in this section.

Table 6.10-2 summarizes the result of the 41 roadway segment analysis compared against future year (2035) No Project conditions for the Downtown Fresno Station area. Two roadway segments that are projected to operate LOS D or better would either have a further reduction in LOS, or V/C ratio that would increase by 0.04 or more. The roadway impacts identified surrounding the Fresno station are considered to be substantial under NEPA and significant under CEQA.

Table 6.10-2
Future Year (2035) with Project Roadway Segment Analysis – Downtown Fresno Station

No.	Roadway Segment	Number of Lanes	Divided / Undivided	Average Daily Traffic: 2035 No Project	Average Daily Traffic: 2035 plus HST	LOS: 2035 No Project	LOS: 2035 plus HST	Impact
1	Fulton St, between CA 180 EB Ramps and E Divisadero St	0/2	One-Way	8,230	8,380	D	D	No
2	Van Ness Ave, between CA 180 EB Ramps and E Divisadero St	2/0	One-Way	13,670	14,450	D	D	No
3	E Divisadero St, between H St and Broadway St	2/2	Undivided	32,610	32,610	F	F	No
4	H St, between E Divisadero St and Stanislaus St	1/1	Undivided	16,150	16,410	F	F	No
5	Broadway St, between San Joaquin St and Stanislaus St	1/2	Undivided	12,730	12,730	D	D	No

No.	Roadway Segment	Number of Lanes	Divided/ Undivided	Average Daily Traffic		LOS		Impact
				2035 No Project	2035 plus HST	2035 No Project	2035 plus HST	
6	Van Ness Ave, between Stanislaus St and E Divisadero St	1/1	Undivided/ Divided	8,280	9,920	D	D	No
7	Stanislaus St, between Van Ness Ave and O St	0/3	One-Way	17,440	17,780	D	D	No
8	N Blackstone Ave, between Mckenzie Ave and E Belmont Ave	0/3	One-Way	21,360	21,700	D	D	No
9	N Abby St, between Mckenzie Ave and E Belmont Ave	3/0	One-Way	16,980	17,340	D	D	No
10	E Belmont Ave, between N Fresno St and N Abby St	2/2	Divided	34,810	34,810	F	F	No
11	Stanislaus St, between Broadway St and E St	0/2	One-Way	24,100	24,120	F	F	No
12	Tuolumne St, between Broadway St and E St	2/0	One-Way	13,060	13,070	D	D	No
13	Tuolumne St, between Van Ness Ave and O St	3/0	One-Way	8,530	8,530	C	C	No
14	Fresno St, between P St and M St	2/2	Divided	29,000	29,810	D	D	No
15	Fresno St, between M St and Van Ness Ave	2/2	Divided	22,500	23,330	D	D	No
16	Fresno St, between Van Ness Ave and Broadway St	2/2	Divided	25,700	26,840	D	D	No
17	Fresno St, between G St and SR 99 NB Ramps	2/2	Divided	27,890	29,920	D	D	No
18	Fresno St, between C St and B St	2/2	Divided	34,380	34,510	F	F	No
19	Van Ness Ave, between Fresno St and Tulare St	2/1	Undivided	14,970	15,960	D	D	No
20	Tulare St, between Broadway St and Van Ness Ave	2/2	Divided	30,210	31,640	D	E	Yes
21	Tulare St, between R	2/2	Undivided	22,310	23,110	D	D	No

No.	Roadway Segment	Number of Lanes	Divided/ Undivided	Average Daily Traffic		LOS		Impact
				2035 No Project	2035 plus HST	2035 No Project	2035 plus HST	
	St and U St							
22	Divisadero St, between N Fresno St and SR 41 Ramps	2/2	Divided/ Undivided	27,160	29,860	D	D/E	Yes
23	Tulare St, between SR 41 Ramps and N 1st St	2/2	Divided/ Undivided	34,630	34,790	F	F	No
24	M St, between Tulare St and Inyo St	0/3	One-Way	17,230	17,280	D	D	No
25	Inyo St, between Broadway St and Van Ness Ave	1/1	Undivided	9,790	11,140	D	D	No
26	Van Ness Ave, between Inyo St and Ventura Ave	2/2	Undivided	13,120	14,040	D	D	No
27	P St, between Inyo St and Ventura Ave	3/0	One-Way	8,800	8,820	C	C	No
28	Ventura Ave, between B St and C St	2/2	Divided	30,390	30,520	E	E	No
29	Ventura Ave, between E Stand G St	2/2	Divided	24,450	24,580	D	D	No
30	Broadway St, between Ventura Ave and SR 41 Ramps	1/2	Undivided	19,480	19,480	D	D	No
31	Van Ness Ave, between Ventura Ave and SR 41 Ramps	2/1	Undivided	19,420	20,240	D	D	No
32	Ventura Ave, between M Stand Van Ness Ave	2/2	Divided	21,310	21,410	D	D	No
33	Ventura Ave, between P St and N 1st St	3/3	Undivided	35,260	35,390	D	D	No
34	N Blackstone Ave, between SR 180 EB Ramps and E Belmont Ave	0/3	One-Way	26,250	26,590	F	F	No

No.	Roadway Segment	Number of Lanes	Divided/ Undivided	Average Daily Traffic		LOS		Impact
				2035 No Project	2035 plus HST	2035 No Project	2035 plus HST	
35	N Abby St, between SR 180 EB Ramps and E Belmont Ave	3/0	One-Way	23,480	23,840	E	F	No
36	Divisadero St between G St and H St	2/1	Undivided	19,777	-	D	-	No
37	Kern St between G St and H St	1/1	Undivided	2,278	-	C	-	No
38	Mono St between G St and H St	1/1	Undivided	820	-	C	-	No
39	S Railroad Ave between E Florence Ave and E Church Ave	1/1	Undivided	3,084	-	C	-	No
40	S Railroad Ave between E Church Ave and E Jensen Ave	1/1	Undivided	2,339	-	C	-	No
41	S Orange Ave between S Railroad Ave and Golden State Blvd	1/1	Undivided	2,308	-	C	-	No

Source: Fresno to Bakersfield Transportation Technical Report, Authority & FRA 2011.

Note: LOS is based on Florida Tables.

Roadway segments with impacts are highlighted.

Acronyms:
ADT=Average Daily Traffic; LOS=level of service; N/E=northeast; SR=State Route; S/W=southwest

6.10.3 Fresno Area Intersection Impacts

6.10.3.1 Existing Plus Project Conditions

Based on the distribution percentages presented in Figure 6.10-1, project volumes were developed at the study intersections. These trips were then added to the existing intersection volumes to arrive at the existing plus project intersection volumes and are presented in Figures 6.10-2(a) through 6.10-2(f).

Table 6.10-3 summarizes the LOS at the 90 study intersections for the Downtown Fresno Station area and identifies the intersections that would experience impacts under the HST alternatives. It can be noted from the table that four intersections (6, 33-0, 63, and 80) would be impacted under existing plus project conditions. These intersection impacts identified surrounding the Fresno station are considered to be substantial under NEPA and significant under CEQA.

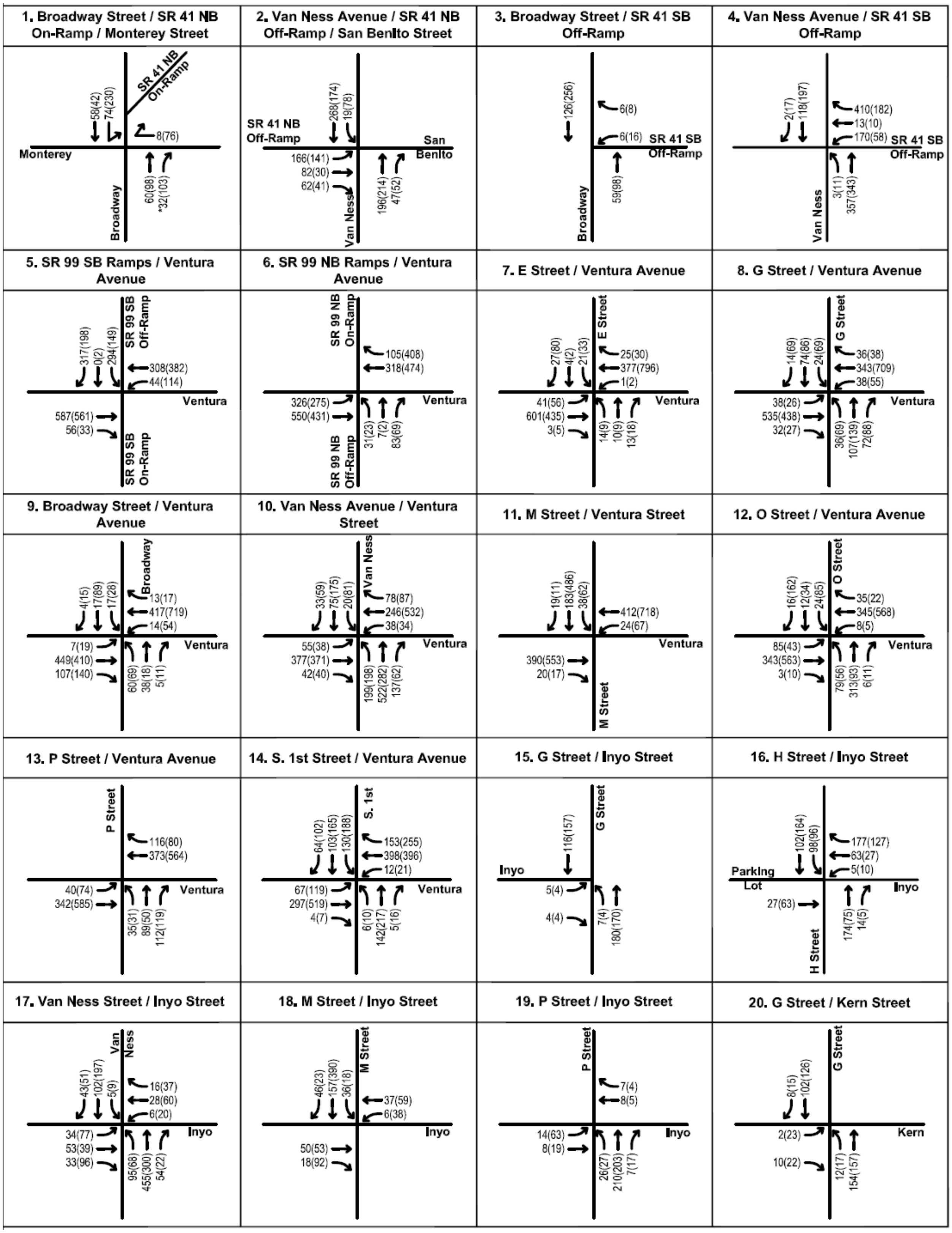


Figure 6.10-2(a)
Existing with Project Intersection Volumes – Fresno Station

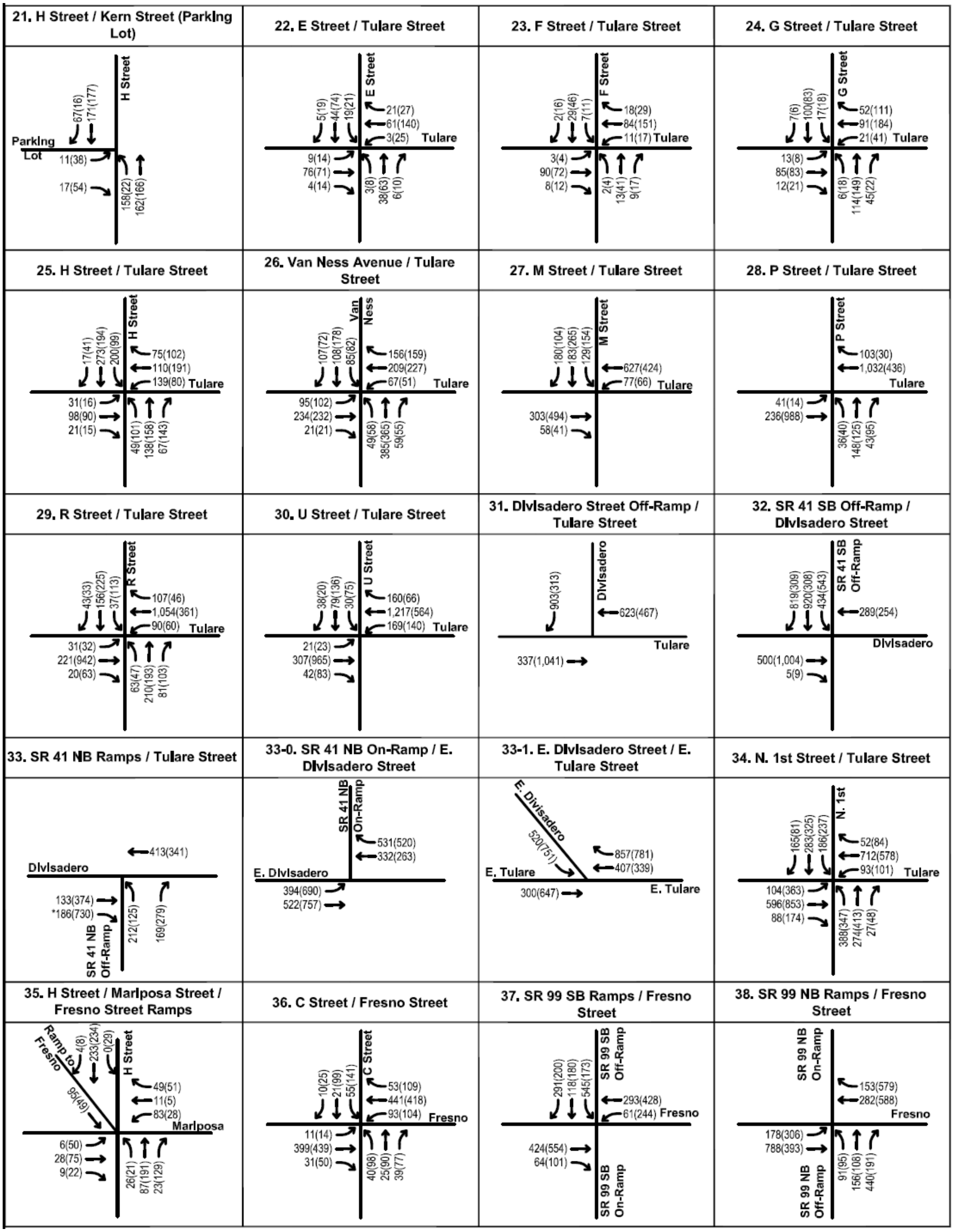


Figure 6.10-2(b)
Existing with Project Intersection Volumes – Fresno Station

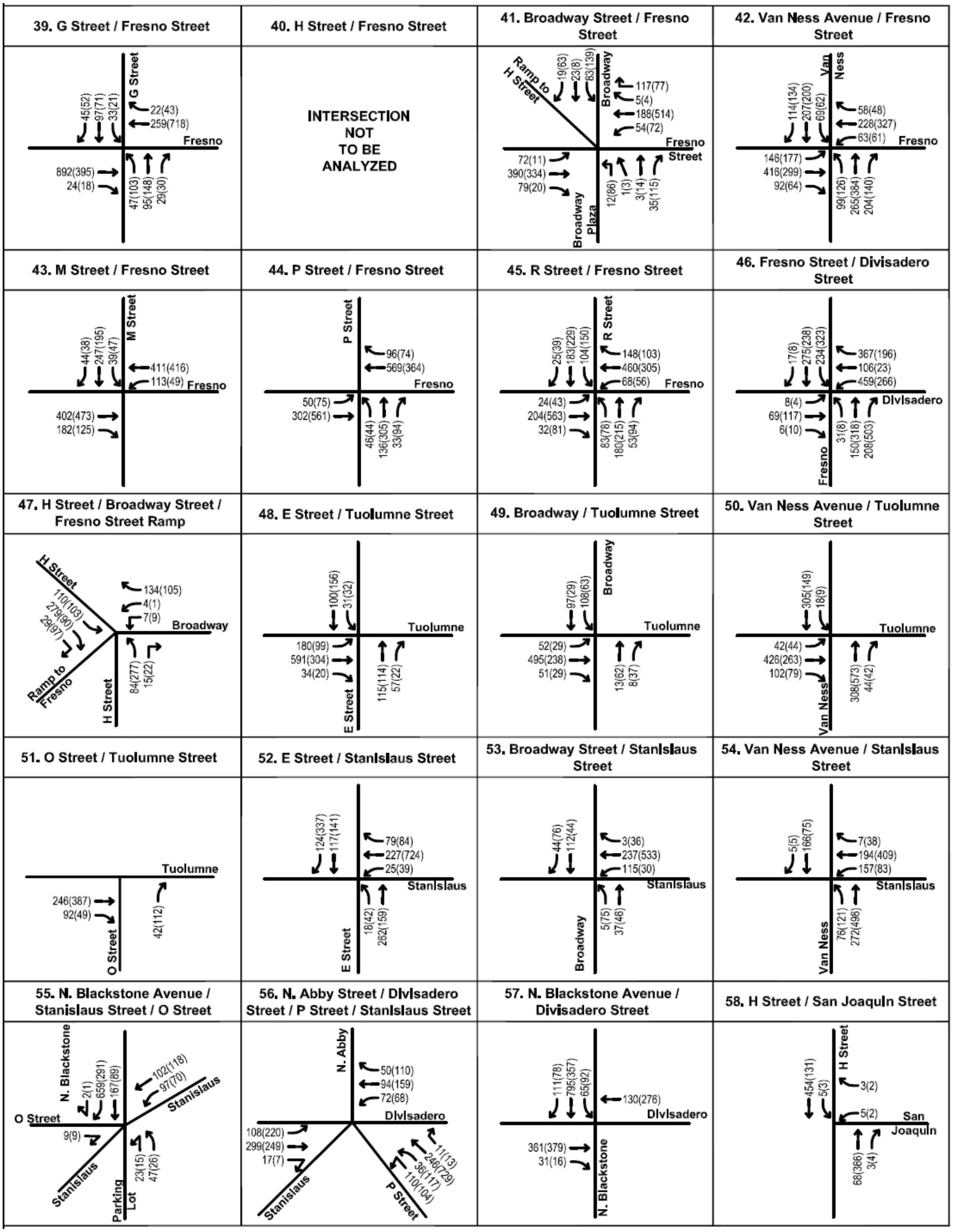


Figure 6.10-2(c)
Existing with Project Intersection Volumes – Fresno Station

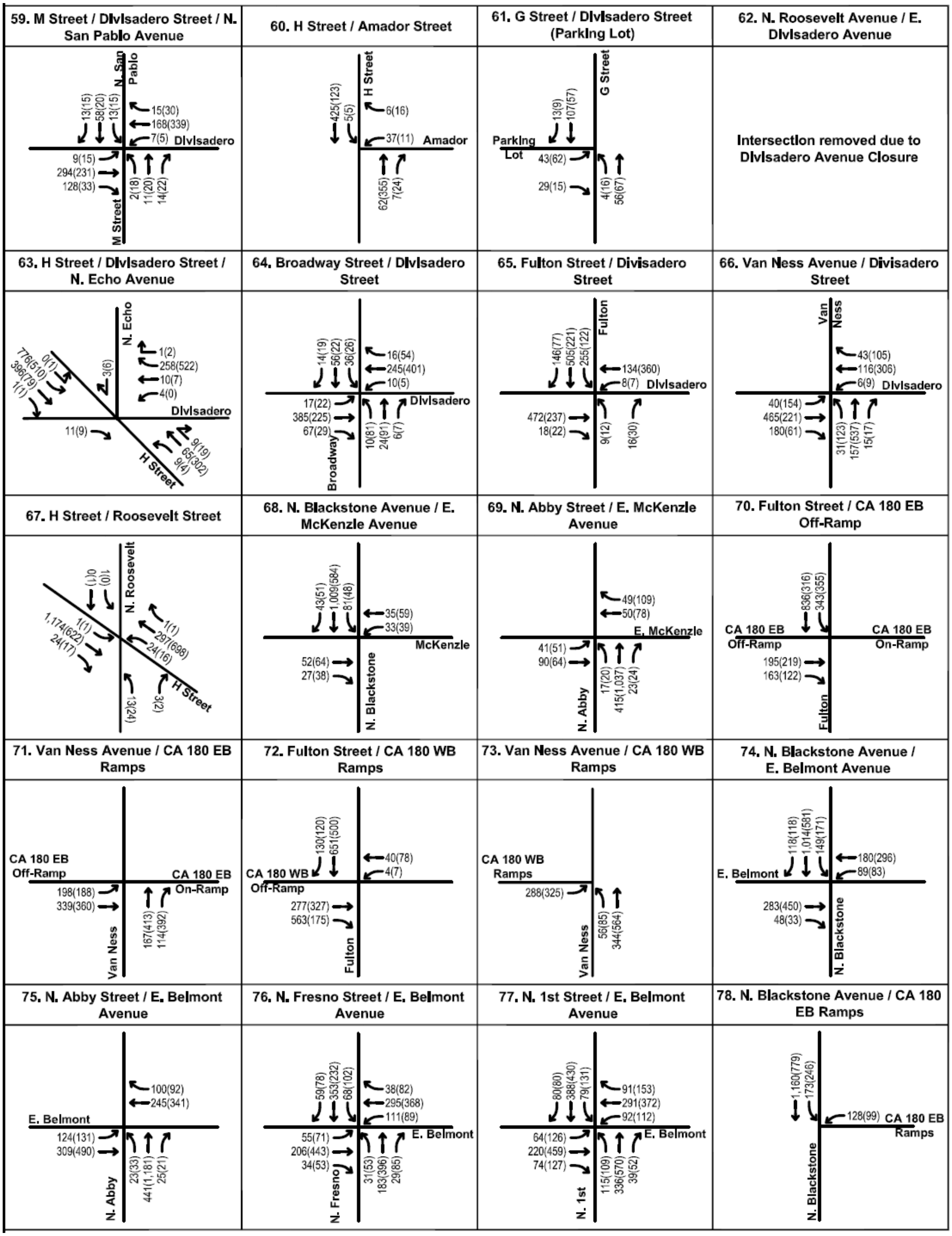


Figure 6.10-2(d)
Existing with Project Intersection Volumes – Fresno Station

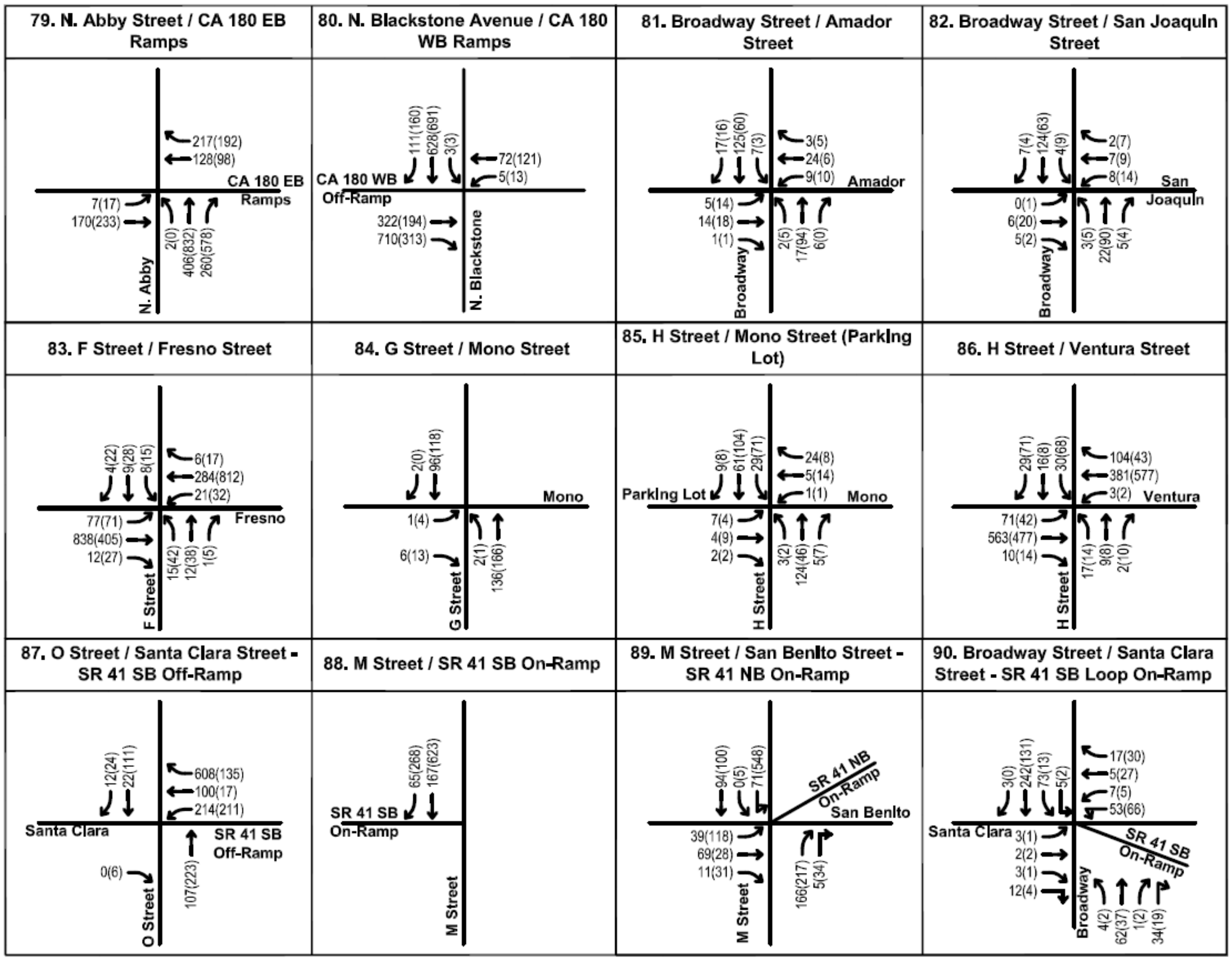


Figure 6.10-2(e)
Existing with Project Intersection Volumes – Fresno Station

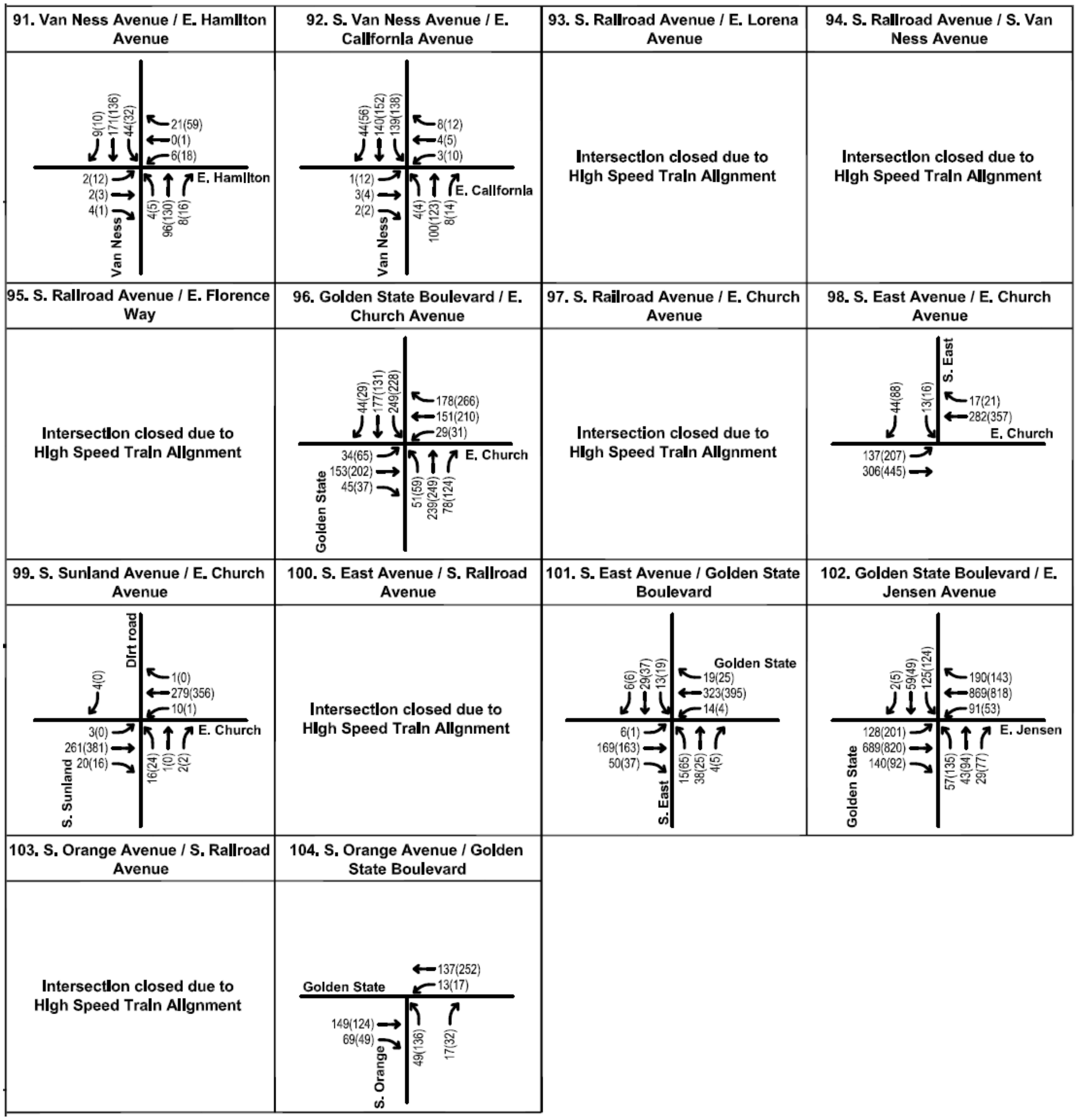


Figure 6.10-2(f)
Existing with Project Intersection Volumes – Fresno Station

Table 6.10-3
Existing with Project Intersection Level of Service Summary for Proposed Fresno HST Station Area

		AM Peak Hour					PM Peak Hour				
		Existing		Existing plus HST			Existing		Existing plus HST		
	Intersection	LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
1	Broadway St/SR 41 NB Ramp/Monterey St	A	8.9	A	8.9	No	B	10.3	B	10.3	No
2	Van Ness Ave/SR 41 NB Ramp	B	10.2	B	11.8	No	B	10.1	B	10.9	No
3	Broadway St/SR 41 SB Ramp	A	9.3	A	9.3	No	B	10.8	B	10.8	No
4	Van Ness Ave/SR 41 SB Ramp	C	24.5	D	32.2	No	B	13.3	B	13.7	No
5	SR 99 SB Ramps/Ventura Ave	B	10.5	B	10.4	No	A	7.2	A	7.1	No
6	SR 99 NB Ramps/Ventura Ave	F	>50	F	>50	Yes	D	34.5	E	35.5	No
7	E St/Ventura Ave	D	32.1	D	33.0	No	E	35.7	E	37.1	No
8	G St/Ventura Ave	A	9.6	A	9.6	No	B	10.5	B	10.6	No
9	Broadway St/Ventura Ave	B	14.7	B	14.7	No	C	20.7	C	20.7	No
10	Van Ness Ave/Ventura St	B	18.6	B	19.5	No	B	16.2	B	17.1	No
11	M St/Ventura Ave	A	9.2	A	9.2	No	B	10.4	B	10.5	No
12	O St/Ventura Ave	C	27.3	C	27.4	No	C	21.6	C	21.6	No
13	P St/Ventura Ave	A	6.1	A	6.1	No	A	4.9	A	4.9	No
14	N 1st St/Ventura Ave	B	13.6	B	13.5	No	B	16.5	B	16.5	No
15	G St/Inyo St	A	9.9	A	9.9	No	B	10	B	10.1	No
16	H St/ Inyo St	A	9.6	B	12.4	No	A	7.8	A	9.4	No
17	Van Ness Ave/Inyo St	A	7.1	A	9.0	No	A	8.1	A	8.2	No
18	M St/Inyo St	A	6.5	A	6.5	No	A	8.2	A	8.2	No
19	P St/Inyo St	B	10.7	B	10.8	No	B	11.1	B	11.1	No
20	G St/Kern St	A	4.6	A	4.3	No	A	5.1	A	4.8	No
21	H St/Kern St	B	13.2	B	13.3	No	B	11.6	B	11.6	No
22	E St/Tulare St	A	7.5	A	7.5	No	A	7.7	A	7.7	No
23	F St/Tulare St	A	5.7	A	5.7	No	A	7.5	A	7.5	No
24	G St/Tulare St	A	7.9	B	8.0	No	B	11.4	B	12.4	No
25	H St/Tulare St	B	11.1	B	11.6	No	B	10.5	B	11.1	No
26	Van Ness Ave/Tulare St	C	20.4	C	22.0	No	B	18.5	C	21.8	No

	Intersection	AM Peak Hour					PM Peak Hour				
		Existing		Existing plus HST			Existing		Existing plus HST		
		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
27	M St/Tulare St	A	9.8	A	9.9	No	B	10.5	B	10.5	No
28	P St/Tulare St	A	6.4	A	6.6	No	A	6.2	A	6.4	No
29	R St/Tulare St	B	12	B	12.6	No	B	11.8	B	12.1	No
30	U St/Tulare St	A	6.1	A	6.3	No	B	13.3	B	13.9	No
31	Divisadero St Off-ramp/Tulare St	A	7.1	A	7.2	No	B	11.7	B	12.6	No
32	SR 41 SB Ramp/Divisadero St	C	20.3	C	21.0	No	A	9.8	B	10.2	No
33	SR 41 NB Ramps/Tulare St	B	10	B	10.2	No	B	12.3	B	12.8	No
33-0	Divisadero St/SR 41 NB Ramps/Tulare St	F	>80	F	>80	Yes	F	>80	F	>80	Yes
34	N 1st St/Tulare St	C	34	C	34.1	No	D	35.9	D	35.9	No
35	H St/Mariposa St/Fresno Ramps	A	9.4	A	9.1	No	A	8.3	A	8.3	No
36	C St/Fresno St	A	8.1	A	7.8	No	B	13.4	B	13.4	No
37	SR 99 SB Ramps/Fresno St	B	18.2	C	22.5	No	C	23.7	D	39.8	No
38	SR 99 NB Ramps/Fresno St	B	16.2	B	17.9	No	C	22.5	C	24.0	No
39	G St/Fresno St	A	7.2	A	7.6	No	A	7	A	8.0	No
40	H Street/Fresno Street	Intersection Not Used									
41	Broadway St/Fresno St	A	5	A	5.1	No	A	6.9	A	9.5	No
42	Van Ness Ave/Fresno St	C	23.6	C	26.9	No	C	25.4	C	29.6	No
43	M St/Fresno St	A	9.6	A	9.7	No	A	9.4	A	9.4	No
44	P St/Fresno St	A	9.6	A	9.6	No	A	9.8	A	9.9	No
45	Fresno St/R St	B	11.1	B	11.1	No	B	11.8	B	11.8	No
46	Fresno St/Divisadero St	C	22.7	C	22.9	No	C	23.1	C	23.6	No
47	H St/Broadway St	A	6.7	A	9.4	No	A	8.9	A	9.1	No
48	E St/Tuolumne St	A	8.9	A	8.9	No	B	10.2	B	10.2	No
49	Broadway St/Tuolumne St	B	10.1	B	10.1	No	B	11	B	11.0	No
50	Van Ness Ave/Tuolumne St	B	11.2	B	11.2	No	B	12.7	B	14.6	No
51	O St/Tuolumne St	A	4.1	A	4.1	No	A	4.3	A	4.2	No
52	E St/Stanislaus St	A	6.2	A	6.2	No	A	8.5	A	8.5	No

Intersection		AM Peak Hour					PM Peak Hour				
		Existing		Existing plus HST			Existing		Existing plus HST		
		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
53	Broadway St/Stanislaus St	A	9.3	A	9.3	No	A	8.6	A	8.6	No
54	Van Ness Ave/Stanislaus St	B	10.5	B	10.9	No	B	11.9	B	12.6	No
55	N Blackstone Ave/Stanislaus St	B	19.9	C	23.2	No	B	15.3	B	15.4	No
56	N Abby St/E Divisadero St	B	10.9	B	10.9	No	B	13.5	B	13.9	No
57	N Blackstone Ave/Divisadero St	B	13.8	B	15.2	No	B	10.5	B	10.6	No
58	H St/San Joaquin St	B	12.8	B	13.2	No	B	12.4	B	12.7	No
59	M St/Divisadero St	A	7.6	A	7.6	No	A	6.4	A	6.4	No
60	H St/Amador St	B	14.6	C	15.6	No	B	12.3	B	12.9	No
61	G St/Divisadero St	A	8.1	A	5.3	No	A	8.7	A	5.8	No
62	N Roosevelt Ave/E Divisadero Ave	B	13.8	NA	NA	No	C	16.5	NA	NA	No
63	H St/Divisadero St	E	74.7	F	>80	Yes	C	33.7	C	34.6	No
64	Broadway St/Divisadero St	A	5.7	A	5.8	No	A	7.7	A	7.8	No
65	Fulton St/Divisadero St	B	11.9	B	11.9	No	B	10.6	B	10.6	No
66	Van Ness Ave/Divisadero St	A	8.7	B	12.0	No	B	13.2	B	14.5	No
67	H St/Roosevelt St	B	13.9	C	20.1	No	B	13.5	A	4.1	No
68	N Blackstone Ave/E Mckenzie Ave	A	5.7	A	5.7	No	A	6.8	A	6.8	No
69	N Abby St/E Mckenzie Ave	A	6.8	A	6.7	No	A	7.5	A	7.6	No
70	Fulton St/SR 180 EB Ramps	B	11.3	B	12.1	No	A	8.7	A	8.8	No
71	Van Ness Ave/SR 180 EB Ramps	A	7.4	A	7.5	No	B	10.8	B	11.4	No
72	Fulton St/SR 180 WB Ramps	B	18	B	17.9	No	A	9.8	A	9.8	No
73	Van Ness Ave/SR 180 WB Ramps	A	8.7	A	8.8	No	B	10.6	B	10.7	No
74	N Blackstone Ave/E Belmont Ave	B	17.5	B	18.0	No	B	15	B	15.2	No
75	N Abby St/E Belmont St	B	13.5	B	13.5	No	B	16.4	B	16.7	No
76	Fresno St/E Belmont St	C	23.9	C	24.4	No	C	29.9	C	30.3	No

Intersection		AM Peak Hour					PM Peak Hour				
		Existing		Existing plus HST			Existing		Existing plus HST		
		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
77	N 1st St/E Belmont St	C	22	C	22.1	No	C	27.1	C	27.3	No
78	N Blackstone Ave/SR 180 EB Ramps	A	8.5	A	8.7	No	A	5.9	A	5.9	No
79	N Abby St/SR 180 EB Ramps	A	9	A	9.0	No	B	11	B	11.2	No
80	N Blackstone Ave/SR 180 WB Ramps	F	>80.0	F	>80	Yes	B	17.4	B	18.2	No
81	Broadway St/Amador St	B	10.2	B	10.3	No	B	10.9	B	11.1	No
82	Broadway St/San Joaquin St	A	9.8	A	9.8	No	B	11	B	11.0	No
83	F St/Fresno St	A	4.8	A	4.8	No	A	5.2	A	5.2	No
84	G St/Mono St	B	10.2	A	9.2	No	B	11	A	9.4	No
85	H St/Mono St	B	11	B	11	No	B	11.9	B	11.9	No
86	H St/Ventura St	D	34.7	D	34.5	No	D	28.6	D	28.9	No
87	O St/Santa Clara St - SR 41 SB Off-ramp	B	11.5	B	11.5	No	B	11.1	B	11.1	No
88	M St/SR 41 SB On-ramp	Intersection Not Used									
89	M St/San Benito - SR 41 NB On-ramp	B	11.3	B	11.7	No	F	>50	F	>50	No
90	Broadway St/Santa Clara St	B	12.5	B	15.8	No	B	10	B	11.2	No
91	Van Ness Ave/E Hamilton Ave	A	9.0	A	9.0	No	A	8.7	A	8.7	No
92	S Van Ness Ave/E California Ave	B	10.8	B	13.7	No	B	11.6	C	16.6	No
93	S Railroad Ave/E Lorena Ave	A	0.3	NA	NA	No	A	9.6	NA	NA	No
94	S Van Ness Ave/S Railroad Ave	B	10.7	NA	NA	No	B	11	NA	NA	No
95	S Railroad Ave/E Florence Ave	B	11.0	NA	NA	No	B	11.5	NA	NA	No
96	Golden State Blvd/E Church Ave	B	14.1	B	15.3	No	B	13.3	B	15.9	No
97	S Railroad Ave/E Church Ave	A	5.4	NA	NA	No	A	5.8	NA	NA	No
98	S East Ave/E Church Ave	B	11.4	B	12.6	No	B	12.8	C	15.4	No

Intersection		AM Peak Hour					PM Peak Hour				
		Existing		Existing plus HST			Existing		Existing plus HST		
		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
99	S Sunland Ave/E Church Ave	B	14.4	B	14.5	No	C	16.3	C	16.6	No
100	S East Ave/S Railroad Ave	B	10.7	NA	NA	No	B	11.1	NA	NA	No
101	S East Ave/Golden State Blvd	B	17.2	B	10.9	No	C	24.9	C	23.3	No
102	Golden State Blvd/E Jensen Ave	B	14.9	B	14.7	No	B	14.8	B	15.5	No
103	S Railroad Ave/S Orange Ave	A	9.1	NA	NA	No	A	7.3	NA	NA	No
104	S Golden State Blvd/S Orange Ave	B	11.7	B	10.8	No	B	13.8	B	12.5	No

Notes:
Intersections 62, 93, 94, 95, 97, 100 and 103 do not exist under project conditions.
Intersections with impacts are highlighted.
Source: Fresno to Bakersfield Transportation Technical Report, Authority & FRA 2011.

6.10.3.2 Future Year (2035) Plus Project Conditions

Based on the distribution percentages presented in Figure 6.10-1, project volumes were developed at the study intersections. These volumes were then added to the future year (2035) No Project volumes to obtain future year (2035) with project volumes, which are presented in Figures 6.10-3(a) through 6.10-3(f).

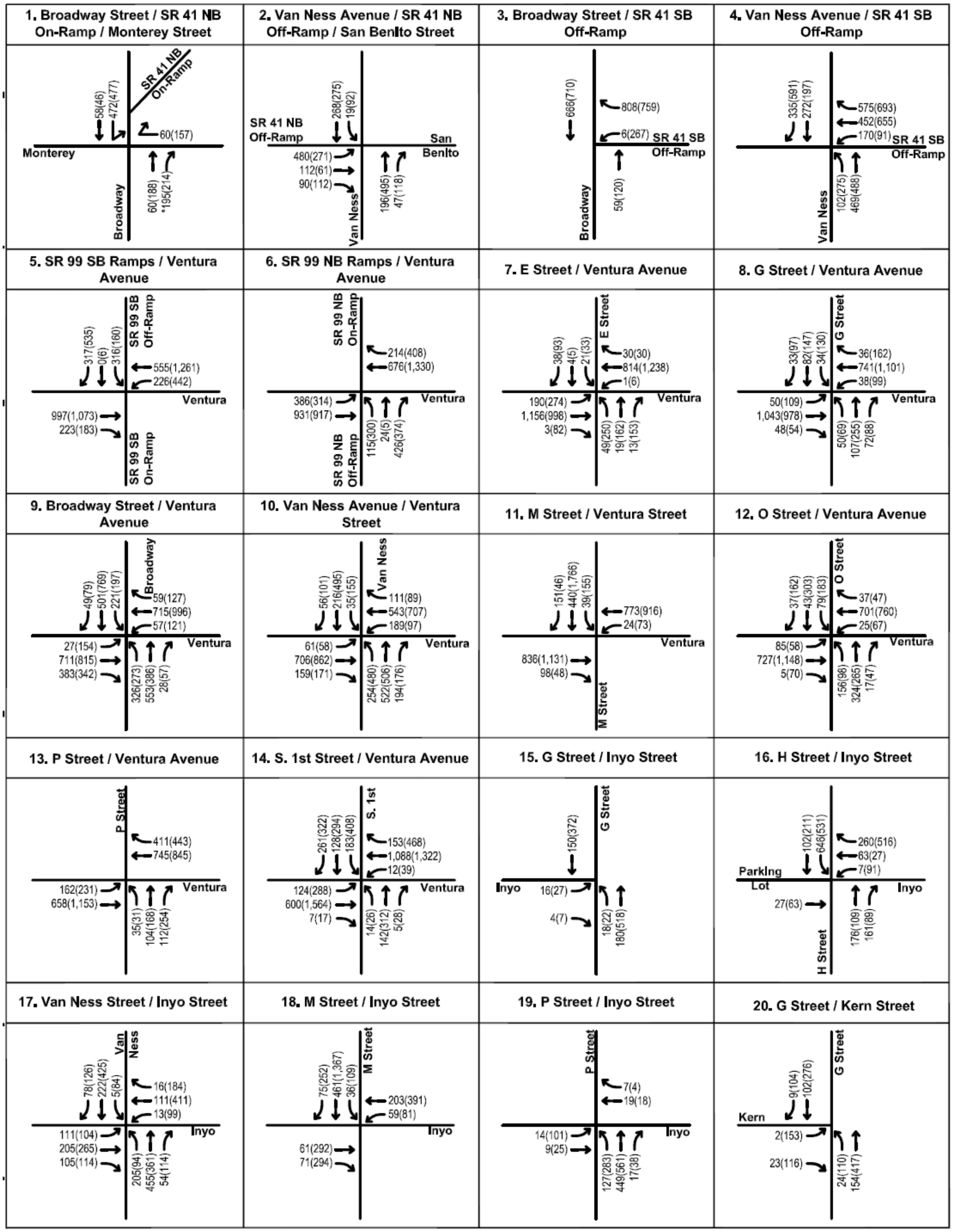


Figure 6.10-3 (a)
Future Year (2035) with Project Volumes – Fresno Station

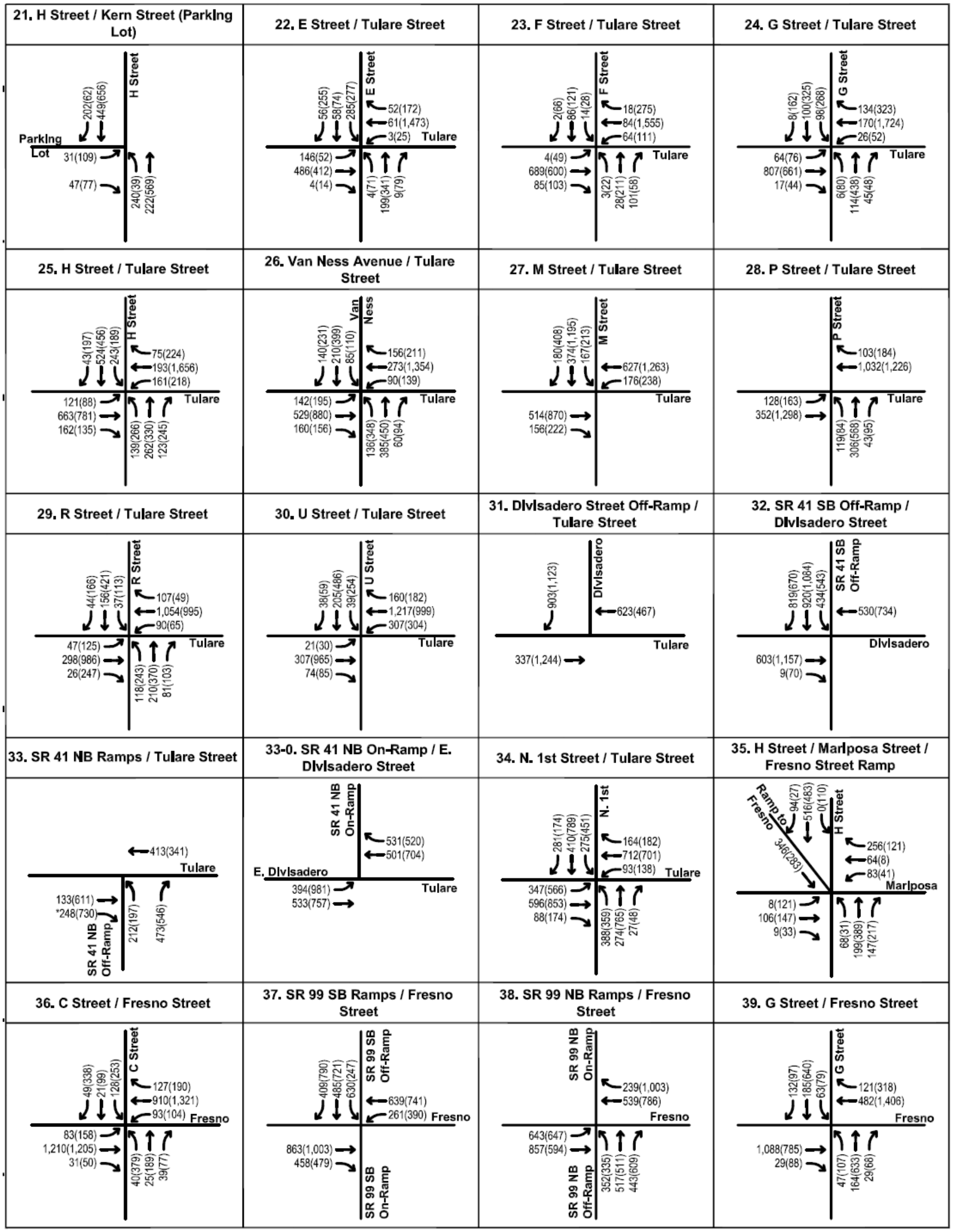


Figure 6.10-3 (b)
Future Year (2035) with Project Volumes – Fresno Station

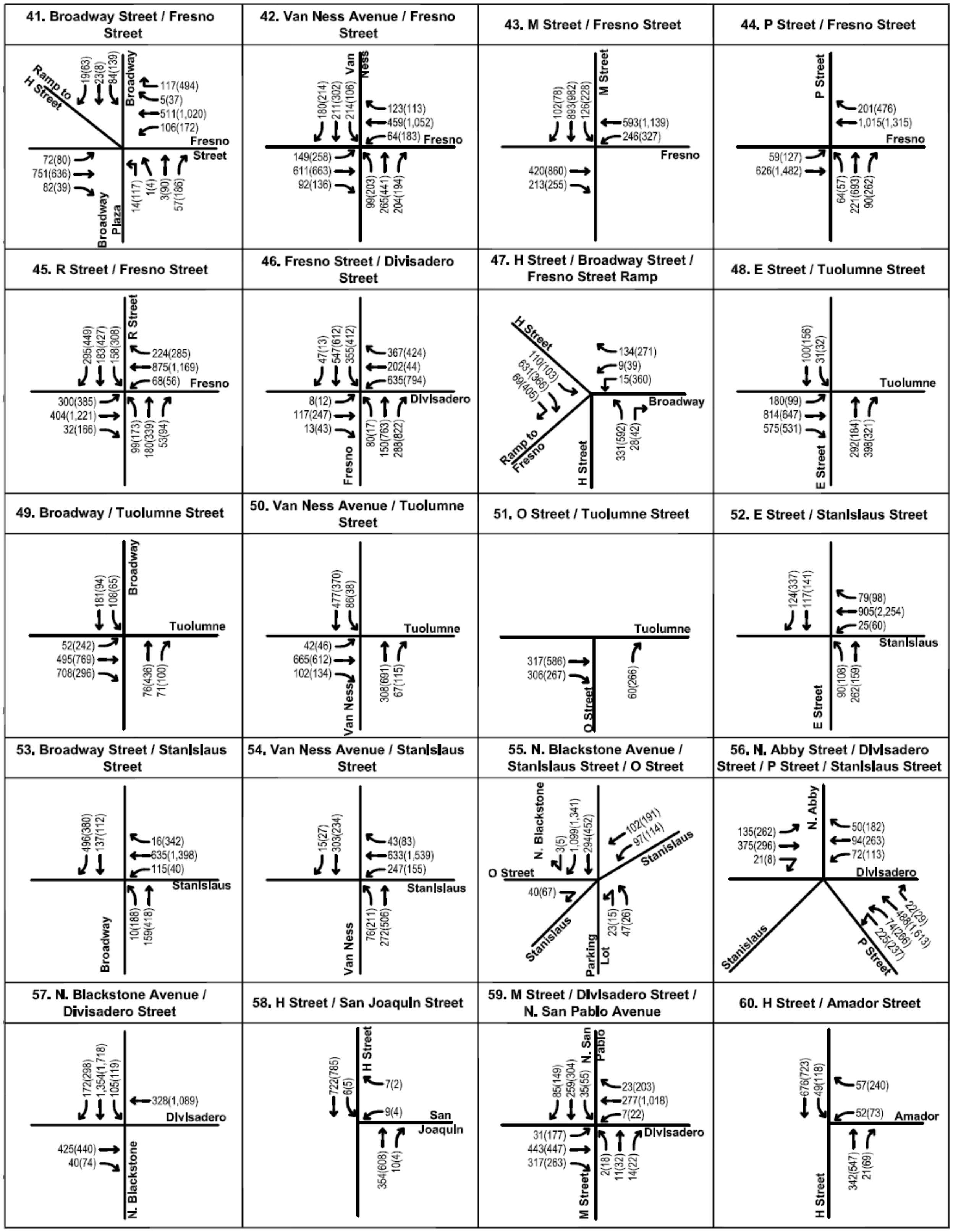


Figure 6.10-3 (c)
Future Year (2035) with Project Volumes – Fresno Station

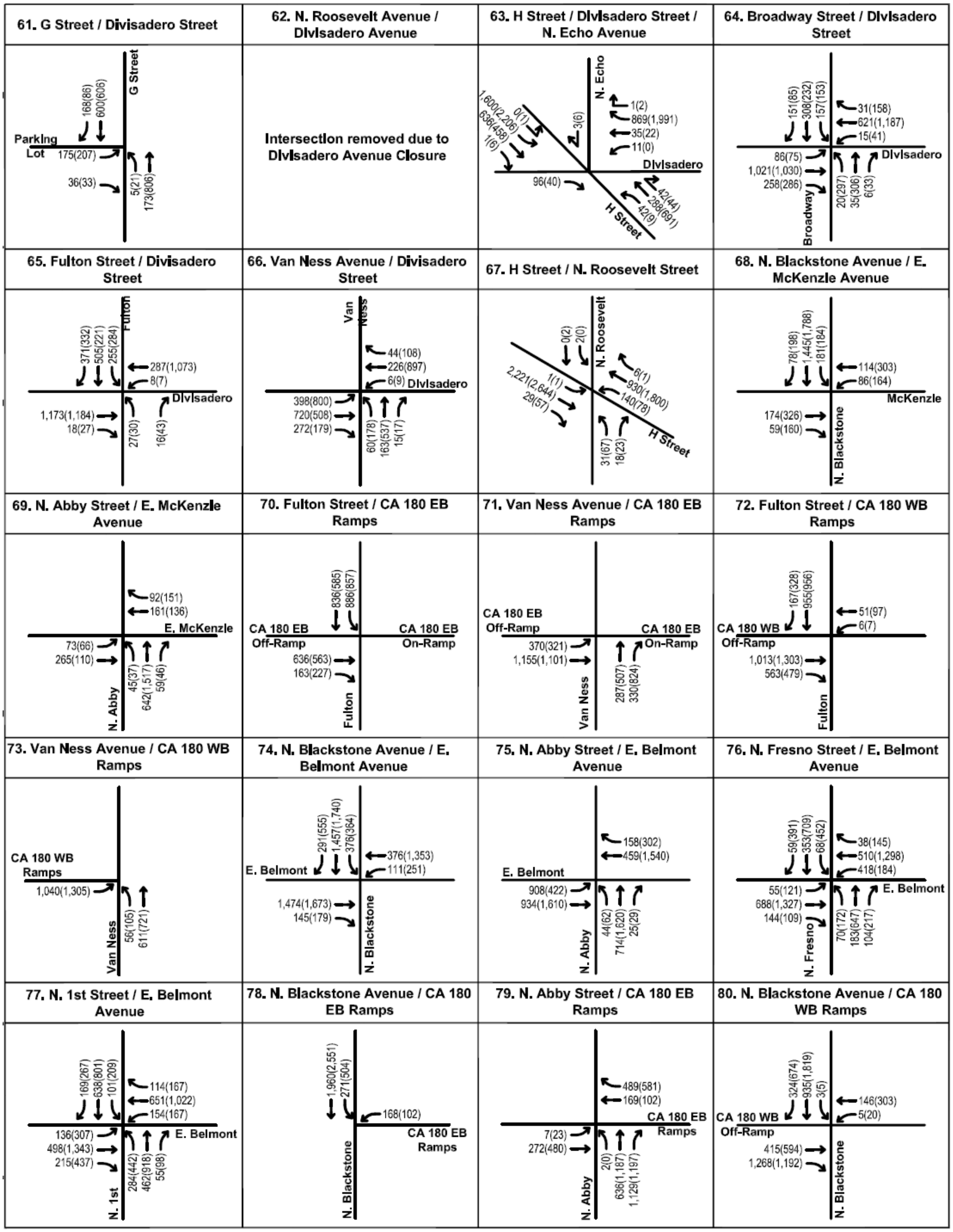


Figure 6.10-3 (d)
Future Year (2035) with Project Volumes – Fresno Station

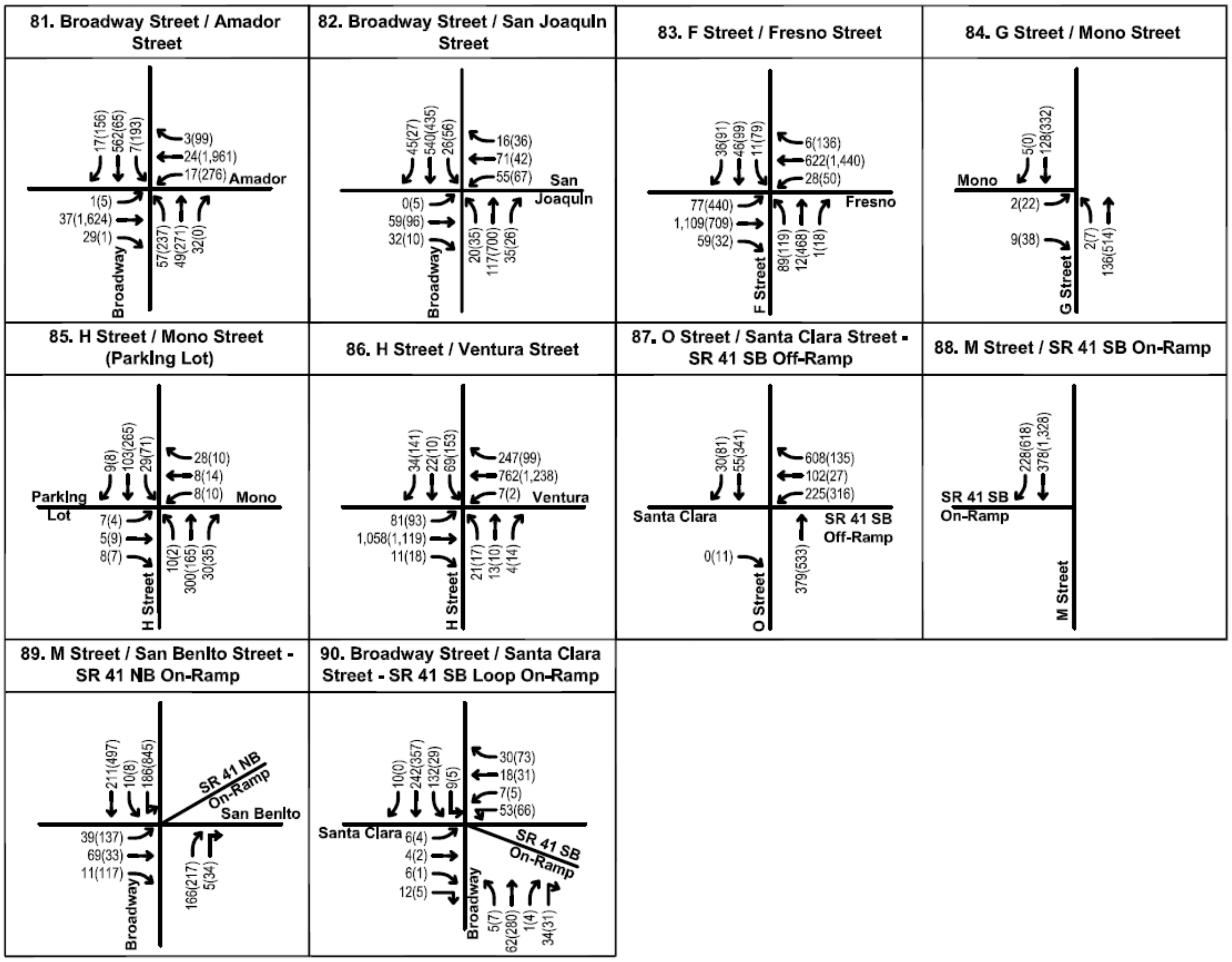


Figure 6.10-3 (e)
Future Year (2035) with Project Volumes – Fresno Station

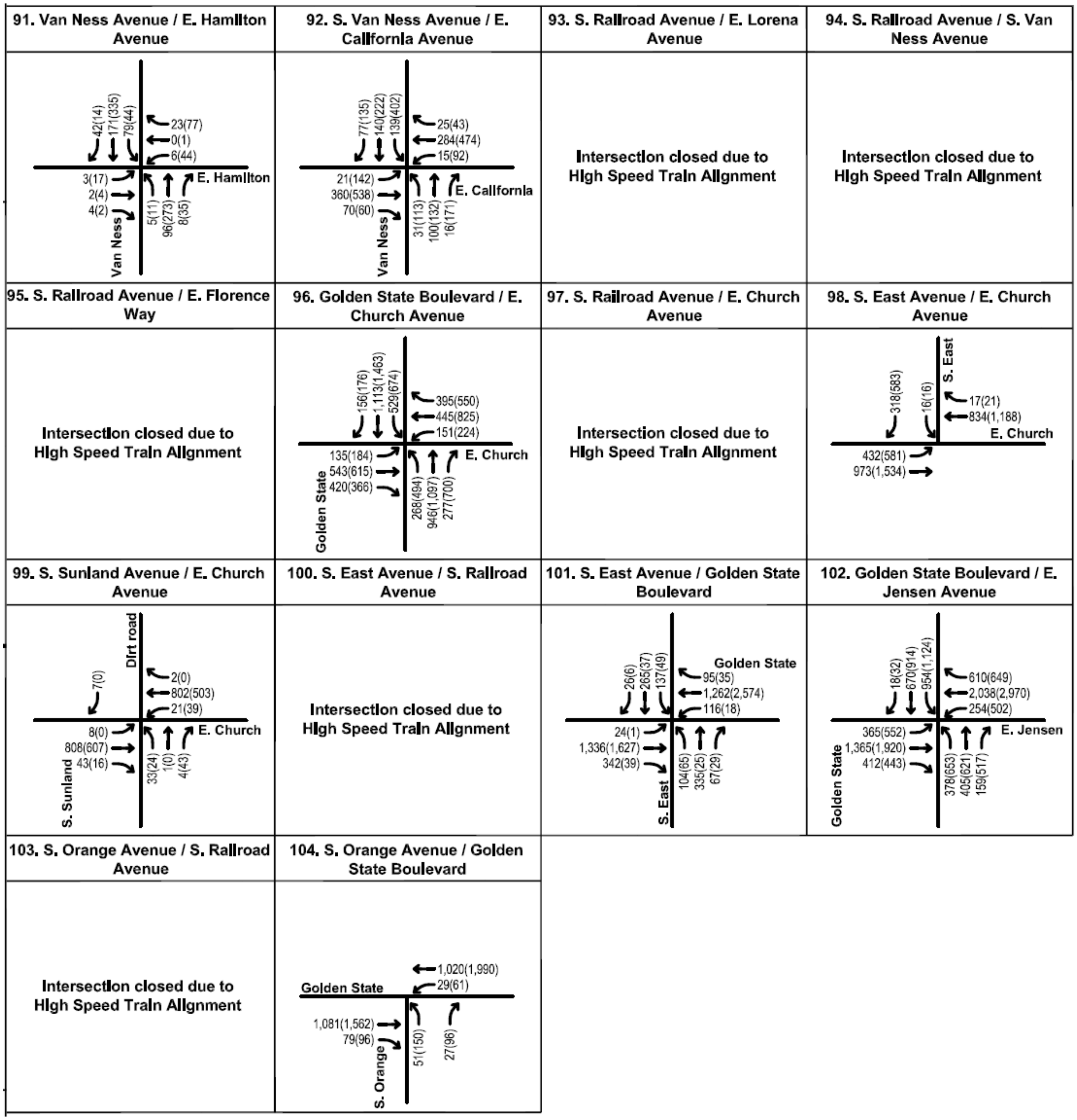


Figure 6.10-3 (f)
Future Year (2035) with Project Volumes – Fresno Station

Table 6.10-4 summarizes the level of service at the 104 study intersections for the Downtown Fresno Station area. It can be noted from the table that 22 intersections would be impacted with the project traffic, which would result in a significant impact under CEQA and a substantial impact under NEPA. The impacted intersections under future (2035) conditions are also shown on Figure 6.10-4.

Table 6.10-4
Future Year (2035) with Project Intersection Operating Conditions around Proposed Fresno HST Station

		AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 plus HST			2035 No Project		2035 plus HST		
	Intersection	LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
1	Broadway St/SR 41 NB Ramp/Monterey St	B	10.2	B	10.2	No	B	13.0	B	13.0	No
2	Van Ness Ave/SR 41 NB Ramp	E	45.8	F	>50	Yes	C	19.3	C	21.2	No
3	Broadway St/SR 41 SB Ramp	D	27.7	D	27.7	No	E	43.5	E	43.5	No
4	Van Ness Ave/SR 41 SB Ramp	F	>50	F	>50	No	F	>50	F	>50	No
5	SR 99 SB Ramps/Ventura Ave	C	29.3	C	30.5	No	F	>80	F	>80	No
6	SR 99 NB Ramps/Ventura Ave	F	>50	F	>50	Yes	F	*	F	*	Yes
7	E St/Ventura Ave	F	*	F	*	Yes	F	*	F	*	Yes
8	G St/Ventura Ave	A	8.5	A	8.5	No	B	14.6	B	14.9	No
9	Broadway St/Ventura Ave	E	75.7	E	75.1	No	F	>80	F	>80	No
10	Van Ness Ave/Ventura St	C	22.2	C	22.8	No	F	>80	F	>80	Yes
11	M St/Ventura Ave	B	10.8	B	10.8	No	C	21.1	C	21.3	No
12	O St/Ventura Ave	C	24.7	C	24.8	No	E	60.5	E	61.8	No
13	P St/Ventura Ave	A	4.7	A	4.7	No	A	8.8	A	8.9	No
14	N 1st St/Ventura Ave	B	15.2	B	15.2	No	D	45.7	D	45.8	No
15	G St/Inyo St	B	10.7	B	10.8	No	C	18.9	C	18.9	No
16	H St/ Inyo St	B	19.0	C	25.6	No	B	15.5	B	19.4	No
17	Van Ness Ave/Inyo St	B	10.4	B	10.5	No	B	15.3	B	16.9	No

Intersection		AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 plus HST			2035 No Project		2035 plus HST		
		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
18	M St/Inyo St	A	9.5	A	9.5	No	B	19.7	B	19.8	No
19	P St/Inyo St	C	16.0	C	16.0	No	F	>50	F	>50	No
20	G St/Kern St	A	5.0	A	4.4	No	B	13.3	A	7.3	No
21	H St/Kern St	D	25.9	D	29.1	No	E	35.8	E	42.6	Yes
22	E St/Tulare St	C	21.7	C	21.6	No	F	>80	F	>80	No
23	F St/Tulare St	B	10.7	B	10.7	No	F	>80	F	>80	No
24	G St/Tulare St	C	27.1	C	26.7	No	F	>80	F	>80	Yes
25	H St/Tulare St	B	12.0	B	16.0	No	D	45.7	E	69.1	Yes
26	Van Ness Ave/Tulare St	C	25.4	C	27.7	No	F	>80	F	>80	Yes
27	M St/Tulare St	B	10.6	B	10.7	No	C	33.0	D	37.0	No
28	P St/Tulare St	B	10.3	B	10.8	No	C	29.7	C	31.0	No
29	R St/Tulare St	B	11.1	B	11.4	No	C	23.6	C	24.9	No
30	U St/Tulare St	A	8.7	A	8.9	No	E	79.8	F	>80	Yes
31	Divisadero St Off-ramp/Tulare St	A	7.0	A	7.1	No	B	11.6	B	11.9	No
32	SR 41 SB Ramp/Divisadero St	B	15.4	B	15.5	No	C	23.0	C	24.4	No
33	SR 41 NB Ramps/Tulare St	A	9.7	A	9.8	No	B	17.4	B	17.7	No
33-0	Divisadero St/SR 41 NB Ramps/Tulare St	C	24.6	C	24.8	No	D	40.8	D	41.8	No
34	N 1st St/Tulare St	D	46.5	D	46.7	No	E	59.5	E	59.8	No
35	H St/Mariposa St/Fresno Ramps	B	11.3	C	11.3	No	B	10.8	B	10.8	No
36	C St/Fresno St	B	11.5	B	11.5	No	F	>80	F	>80	No
37	SR 99 SB Ramps/Fresno St	E	56.4	E	70.3	Yes	F	>80	F	>80	Yes
38	SR 99 NB Ramps/Fresno St	D	43.6	D	45.3	No	F	>80	F	>80	Yes
39	G St/Fresno St	A	8.0	A	8.4	No	B	15.8	C	20.3	No
40	H Street/Fresno Street	Intersection Not Used									

	Intersection	AM Peak Hour 2035 No Project LOS	AM Peak Hour 2035 No Project Del (sec)	AM Peak Hour 2035 plus HST LOS	AM Peak Hour 2035 plus HST Del (sec)	AM Impact	PM Peak Hour 2035 No Project LOS	PM Peak Hour 2035 No Project Del (sec)	PM Peak Hour 2035 plus HST LOS	PM Peak Hour 2035 plus HST Del (sec)	PM Impact
41	Broadway St/Fresno St	A	4.8	A	5.1	No	B	12.7	C	21.2	No
42	Van Ness Ave/Fresno St	C	29.1	C	33.6	No	E	70.1	F	>80	Yes
43	M St/Fresno St	B	13.1	B	13.4	No	D	44.5	D	51.3	No
44	P St/Fresno St	B	11.7	B	11.8	No	B	18.9	C	22.9	No
45	Fresno St/R St	C	23.8	C	24.5	No	F	>80	F	>80	No
46	Fresno St/Divisadero St	C	28.7	C	29.2	No	F	>80	F	>80	Yes
47	H St/Broadway St	A	6.3	A	8.8	No	B	12.7	B	13.1	No
48	E St/Tuolumne St	B	12.9	B	13.0	No	B	11.3	B	11.3	No
49	Broadway St/Tuolumne St	B	12.7	B	12.7	No	B	19.8	B	19.8	No
50	Van Ness Ave/Tuolumne St	B	11.7	B	12.1	No	B	16.7	C	22.5	No
51	O St/Tuolumne St	A	3.5	A	3.5	No	A	6.6	A	6.6	No
52	E St/Stanislaus St	A	7.8	A	7.8	No	B	14.2	B	14.2	No
53	Broadway St/Stanislaus St	B	12.1	B	12.1	No	B	16.7	B	16.7	No
54	Van Ness Ave/Stanislaus St	B	12.6	B	12.9	No	C	23.9	C	26.1	No
55	N Blackstone Ave/Stanislaus St	C	28.2	C	23.4	No	D	41.1	D	45.6	No
56	N Abby St/E Divisadero St	B	11.5	B	11.5	No	C	29.1	C	30.9	No
57	N Blackstone Ave/Divisadero St	B	18.7	C	22.2	No	C	31.3	C	33.1	No
58	H St/San Joaquin St	C	17.5	C	17.9	No	D	26.3	D	27.1	No
59	M St/Divisadero St	B	11.1	B	11.1	No	B	16.4	B	16.4	No
60	H St/Amador St	C	21.5	C	24.5	No	F	>50	F	>50	Yes
61	G St/Divisadero St	C	23.1	A	7.5	No	F	>80	B	11.4	No
62	N Roosevelt Ave/E Divisadero Ave	F	>80	NA	NA	No	F	*	NA	NA	No
63	H St/Divisadero St	F	>80	F	>80	Yes	F	>80	F	>80	Yes

		AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 plus HST			2035 No Project		2035 plus HST		
Intersection		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
64	Broadway St/Divisadero St	B	16.7	B	16.7	No	E	57.3	E	57.5	No
65	Fulton St/Divisadero St	B	15.2	B	15.2	No	B	16.4	B	16.4	No
66	Van Ness Ave/Divisadero St	C	24.0	C	25.1	No	F	>80	F	>80	Yes
67	H St/Roosevelt St	B	19.3	D	51.6	No	F	>80	F	>80	Yes
68	N Blackstone Ave/E Mckenzie Ave	B	10.5	B	10.8	No	F	>80	F	>80	Yes
69	N Abby St/E Mckenzie Ave	B	10.3	B	10.3	No	B	10.5	B	10.7	No
70	Fulton St/SR 180 EB Ramps	C	30.5	C	31.2	No	C	22.7	C	23.1	No
71	Van Ness Ave/SR 180 EB Ramps	C	33.4	D	36.1	No	F	>80	F	>80	Yes
72	Fulton St/SR 180 WB Ramps	D	48.4	D	48.4	No	F	>80	F	>80	No
73	Van Ness Ave/SR 180 WB Ramps	D	39.3	D	39.9	No	F	>80	F	>80	Yes
74	N Blackstone Ave/E Belmont Ave	F	>80	F	>80	Yes	F	>80	F	>80	No
75	N Abby St/E Belmont St	D	46.5	D	47.1	No	F	>80	F	>80	No
76	Fresno St/E Belmont St	D	46.2	D	47.2	No	F	>80	F	>80	No
77	N 1st St/E Belmont St	D	43.6	D	42.3	No	F	>80	F	>80	No
78	N Blackstone Ave/SR 180 EB Ramps	A	8.9	A	9.3	No	A	9.8	B	10.1	No
79	N Abby St/SR 180 EB Ramps	D	43.4	D	45.0	No	F	>80	F	>80	Yes
80	N Blackstone Ave/SR 180 WB Ramps	F	>80	F	>80	Yes	F	>80	F	>80	Yes
81	Broadway St/Amador St	C	18.6	C	18.8	No	F	*	F	*	Yes

	Intersection	AM Peak Hour 2035 No Project LOS	AM 2035 No Project Del (sec)	AM 2035 plus HST LOS	AM 2035 plus HST Del (sec)	AM Impact	PM Peak Hour 2035 No Project LOS	PM 2035 No Project Del (sec)	PM 2035 plus HST LOS	PM 2035 plus HST Del (sec)	PM Impact
82	Broadway St/San Joaquin St	D	28.9	D	28.9	No	F	*	F	*	No
83	F St/Fresno St	A	6.0	A	6.2	No	F	>80	F	>80	No
84	G St/Mono St	B	10.5	A	9.3	No	E	38.2	B	14.2	No
85	H St/Mono St	B	12.2	B	12.2	No	B	14.2	B	14.1	No
86	H St/Ventura St	E	46.0	E	47.3	No	F	*	F	>50	No
87	O St/Santa Clara St - SR 41 SB Off-ramp	C	15.0	C	15.1	No	F	>50	F	>50	No
88	M St/SR 41 SB On-ramp	Intersection Not Used									
89	M St/San Benito - SR 41 NB On-ramp	C	17.7	C	17.7	No	F	*	F	*	No
90	Broadway St/Santa Clara St	B	14.8	C	17.3	No	C	16.9	C	19.9	No
91	Van Ness Ave/E Hamilton Ave	A	9.3	A	9.3	No	B	12.8	B	12.8	No
92	S Van Ness Ave/E California Ave	F	>50	F	*	Yes	F	*	F	*	Yes
93	S Railroad Ave/E Lorena Ave	A	0.2	NA	NA	No	B	10.4	NA	NA	No
94	S Van Ness Ave/S Railroad Ave	B	10.6	NA	NA	No	D	28.6	NA	NA	No
95	S Railroad Ave/E Florence Ave	B	10.6	NA	NA	No	C	20.1	NA	NA	No
96	Golden State Blvd/E Church Ave	D	41.8	E	65.3	Yes	F	>80	F	>80	Yes
97	S Railroad Ave/E Church Ave	A	6.1	NA	NA	No	D	35.8	NA	NA	No
98	S East Ave/E Church Ave	F	>80	F	>80	Yes	F	*	F	*	Yes
99	S Sunland Ave/E Church Ave	F	>50	F	>50	Yes	C	16.3	C	18.5	No
100	S East Ave/S Railroad Ave	B	11.5	NA	NA	No	E	36.7	NA	NA	No
101	S East Ave/Golden State Blvd	D	38.8	D	39.4	No	B	19.4	E	72.3	Yes

Intersection		AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 plus HST			2035 No Project		2035 plus HST		
		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
102	Golden State Blvd/E Jensen Ave	F	>80	F	>80	Yes	F	>80	F	>80	Yes
103	S Railroad Ave/S Orange Ave	B	10.7	NA	NA	No	D	29.4	NA	NA	No
104	S Golden State Blvd/S Orange Ave	F	>50	E	42	No	F	*	F	*	No

Notes:

Intersections 62, 93, 94, 95, 97, 100, and 103 do not exist under project conditions.

* Volumes at the intersections exceed theoretical capacity; as a result, average delay cannot be predicted

Intersections with impacts are highlighted.

Source: URS (2010).

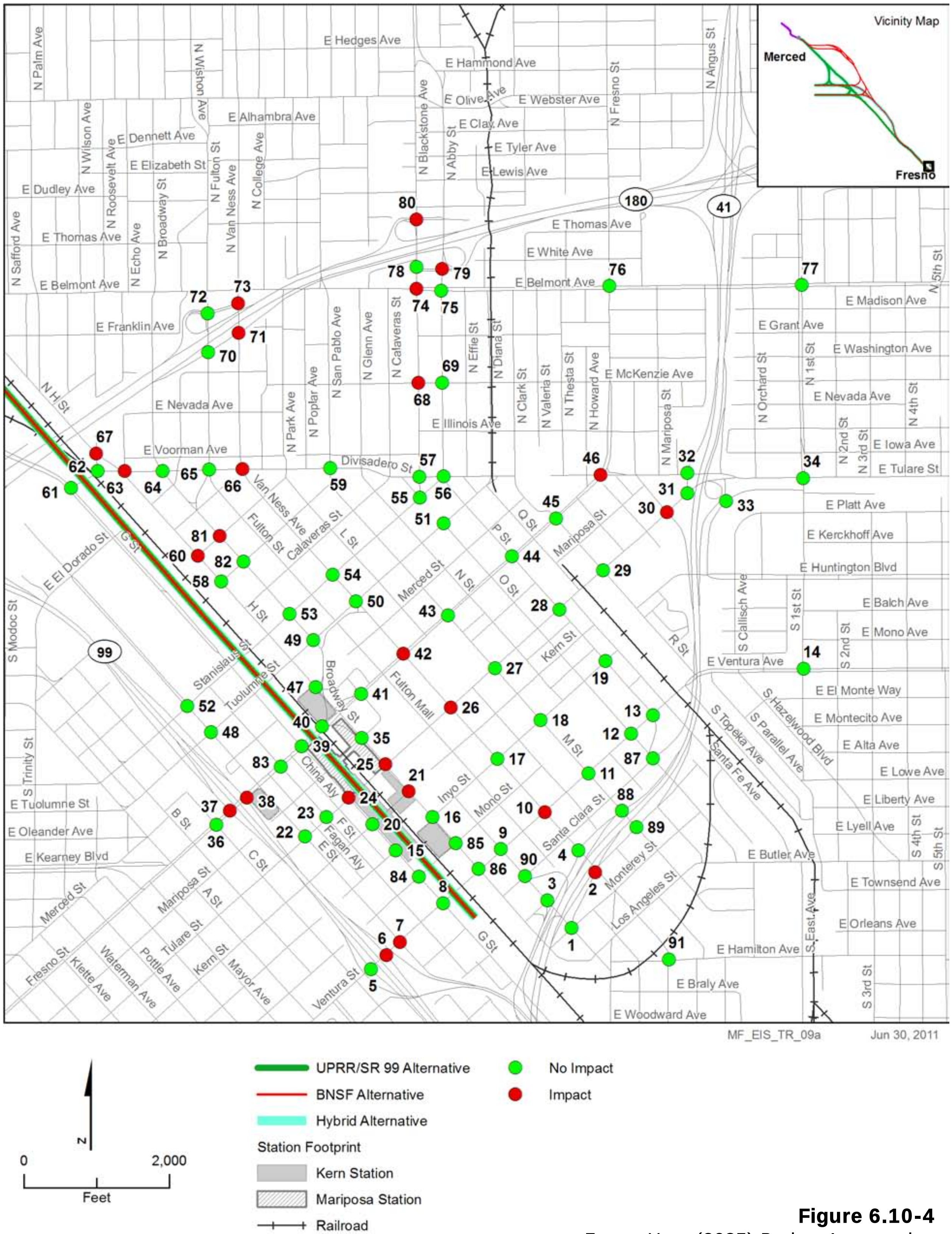


Figure 6.10-4
Future Year (2035) Project Intersection LOS with Proposed Downtown Fresno Station

6.10.4 Fresno Area Transit Impacts

At the Downtown Fresno Station, the proposed project is expected to add approximately 700 daily passengers to the transit service, of which approximately 105 would be peak hour passengers. It is further expected that transit providers serving the Fresno station would include the station site as a stop along the routes that already serve the station area.

Approximately eight transit routes serve the Fresno station area. The addition of approximately 105 passengers on existing transit routes averages approximately 13 additional passengers on each route serving the Fresno station area (assuming equal distribution). The existing transit fleet is expected to be able to accommodate the per-route increases associated with the HST. The addition of these passengers to the existing transit routes during the peak hour is expected to have a negligible impact on transit under NEPA and a less than significant impact under CEQA.

6.10.5 Fresno Area Pedestrian and Bicycle Impacts

The proposed project would not close any of the existing or planned bicycle routes or pedestrian access/routes in the immediate vicinity of stations. An estimated 400 daily passengers would access the Downtown Fresno station area via walking or bike. Approximately 60 passengers would arrive or leave the station area either walking or on a bike during the peak hour. A typical pedestrian sidewalk can accommodate approximately 1,000 persons/hour, based on the HCM. The station would include bike racks, pedestrian connections to the existing sidewalks, and bike lanes/facilities where they can be accommodated within the streets at the stations. The addition of these pedestrian and bike trips during the peak hour (an average of about one pedestrian/bike per one minute) in the Fresno station area would be a negligible impact under NEPA and a less than significant impact under CEQA.

6.10.6 Fresno Area Parking Impacts

The City of Fresno currently has substantial excess public parking available within 1 mile of the alternative Fresno Station sites. Based on discussions with the City, the FRA and Authority would meet projected 2035 parking demand through a combination of new parking structures near the station plus reliance on existing public spaces. This takes advantage of the substantial public parking available in the vicinity of the station sites.

It is conservatively estimated that 5,850 parking spaces would be required for the Fresno Station in 2020, with 7,400 spaces required in 2035. Based on the amount of excess public parking within 1 mile of the station, it is estimated that 2035 parking demand can be met with a total of 5,000 additional parking spaces provided in four new parking structures built adjacent to the station by 2035. All four structures would not be necessary at the opening of the station in 2020. Instead, parking would be provided as demand requires. For the opening of the Fresno Station in 2020, a combination of parking structures and surface parking lots with a total of about 3,500 spaces would be constructed adjacent to the station. Combined with the estimated 2,400 public parking spaces available in the downtown area, this plan would address the estimated 2020 parking demand.

Because the HST project includes a plan to provide adequate station parking, impacts on the existing downtown parking conditions are expected to be negligible under NEPA and less than significant under CEQA.

6.10.7 Fresno Area Freight Impacts

Because the proposed HST service would operate on a separate alignment through the Fresno station area, it would not create any conflicts with or impacts on UPRR freight operations. Pedestrian structures may cross over the freight rail line to provide access to the HST station, but the structures would be designed to meet freight height clearances. Because there would be no conflicts with freight operations, this would be a negligible impact under NEPA and a less than significant impact under CEQA.

6.11 Heavy Maintenance Facility Alternatives

6.11.1 Castle Commerce Site

This facility proposes the building of an overpass at Martin Luther King Jr. Way and the closure of Canal Street in Downtown Merced across the HST and UPRR alignments. Because of these roadway improvements in the vicinity of the proposed Merced station, traffic analysis around this HMF site was performed under two scenarios: (1) assuming Merced Station Parking Option A and (2) assuming Merced Station Parking Option B.

6.11.1.1 Castle Commerce Trip Distribution and Assignment

The trip distribution percentages for the project trips are presented in Figure 6.11-1. Based on the distribution percentages, project volumes were developed for both the AM and PM peak hour conditions for Options A and B.

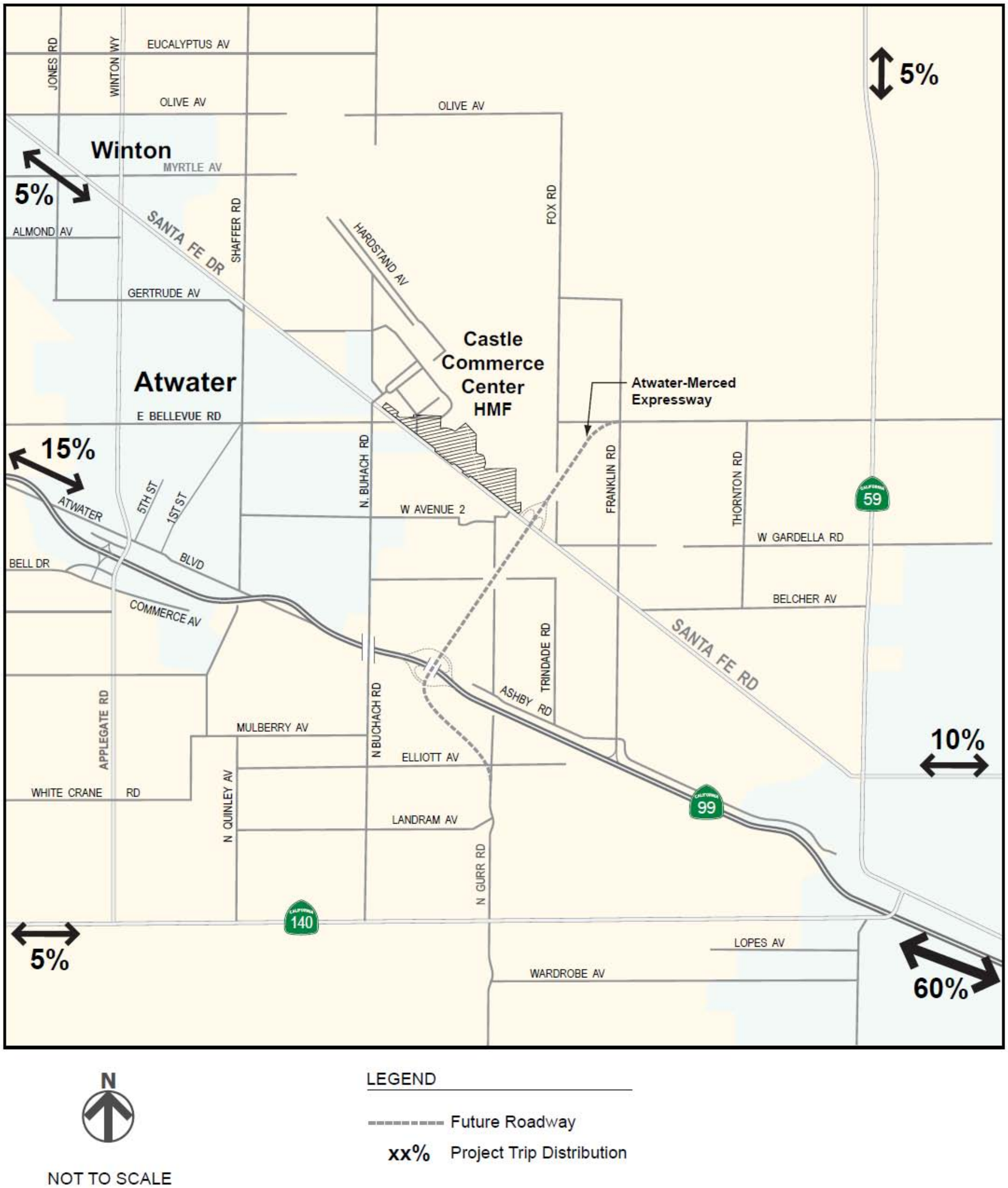


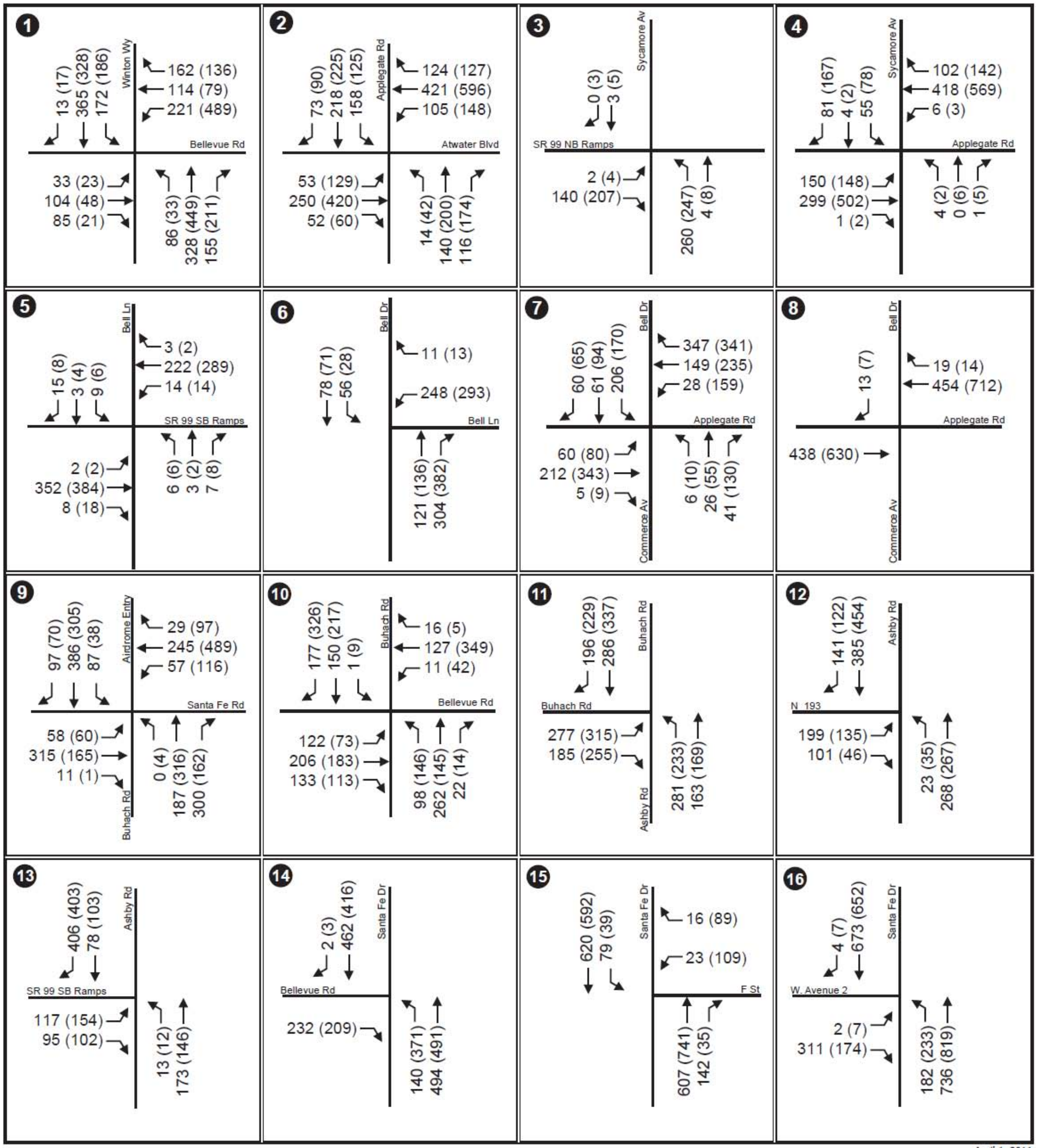
Figure 6.11-1
Project Trip Distribution – Castle Commerce Center HMF

6.11.1.2 Castle Commerce Intersection Impacts

Existing Plus Project Conditions

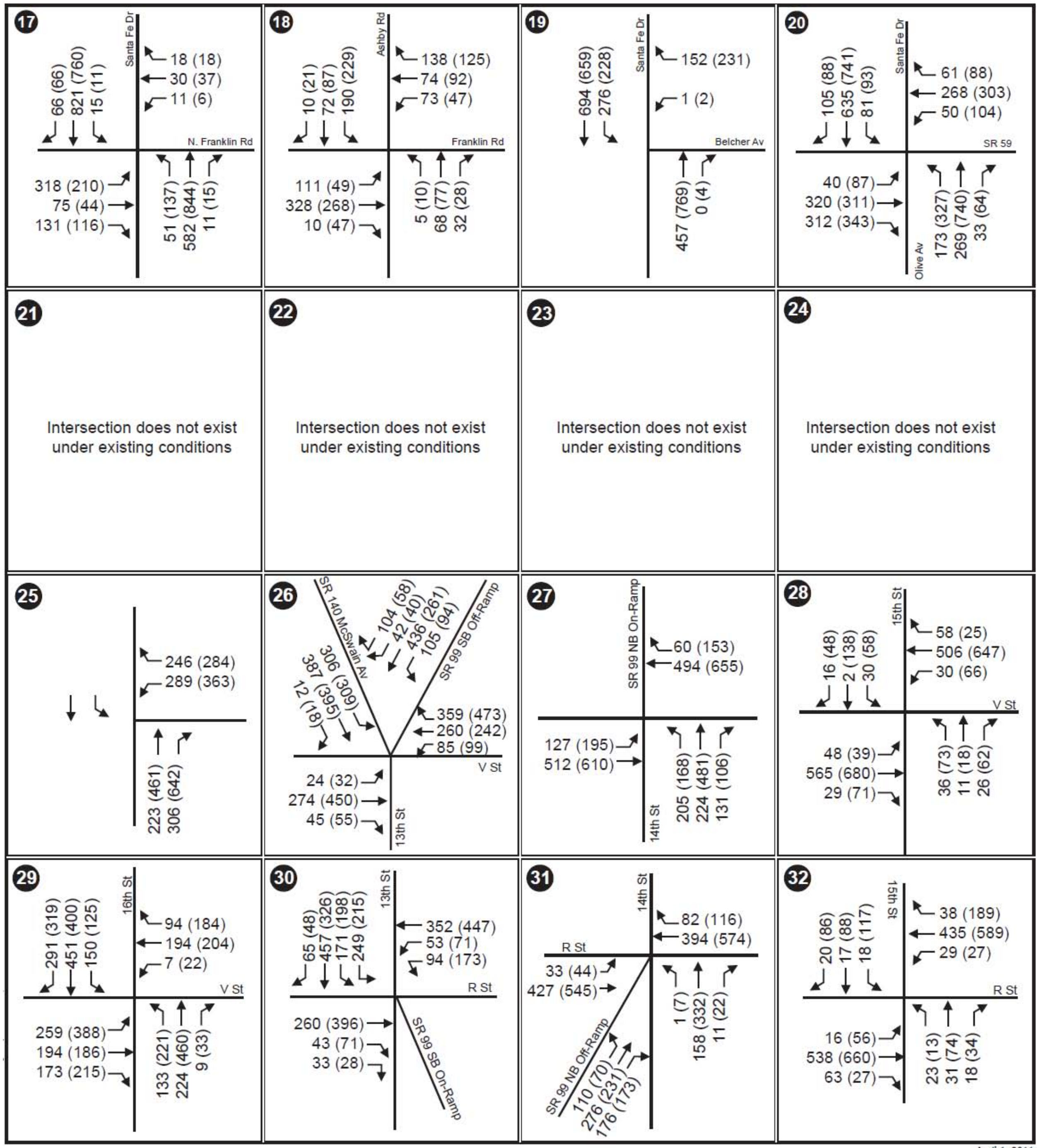
The project volumes for the AM and PM peak hours were added to the existing volumes to obtain existing with project volumes, which are presented in Figures 6.11-2(a) through 6.11-2(e) for Option A and 6.11-3(a) through 6.11-3(e) for Option B.

Based on the existing geometry and existing with project volumes, intersection analysis was performed for the AM and PM peak hours for both options. The result of the analysis compared against the existing conditions is presented in Table 6.11-1 for Option A and 6.11-2 for Option B. Project traffic impacts at study intersections were identified based on the Authority traffic impact criteria guidelines presented in Section 6.4. Intersections with project impacts are highlighted in the table. It can be noted from the tables that eight intersections would be affected by project-related additional traffic under Options A and Option B, which would result in a substantial impact under NEPA and a significant impact under CEQA. However, Intersection 11, Ashby Road/Buhach Road, which would be impacted under both Options A and B, would not exist under future conditions because of the proposed Atwater-Merced Expressway project.



xx (xx) AM (PM) Peak Hour Volumes

Figure 6.11-2(a)
Existing with Project Volumes – Castle Commerce Center HMF (Option A)



xx (xx) AM (PM) Peak Hour Volumes

Figure 6.11-2(b)
Existing with Project Volumes – Castle Commerce Center HMF (Option A)

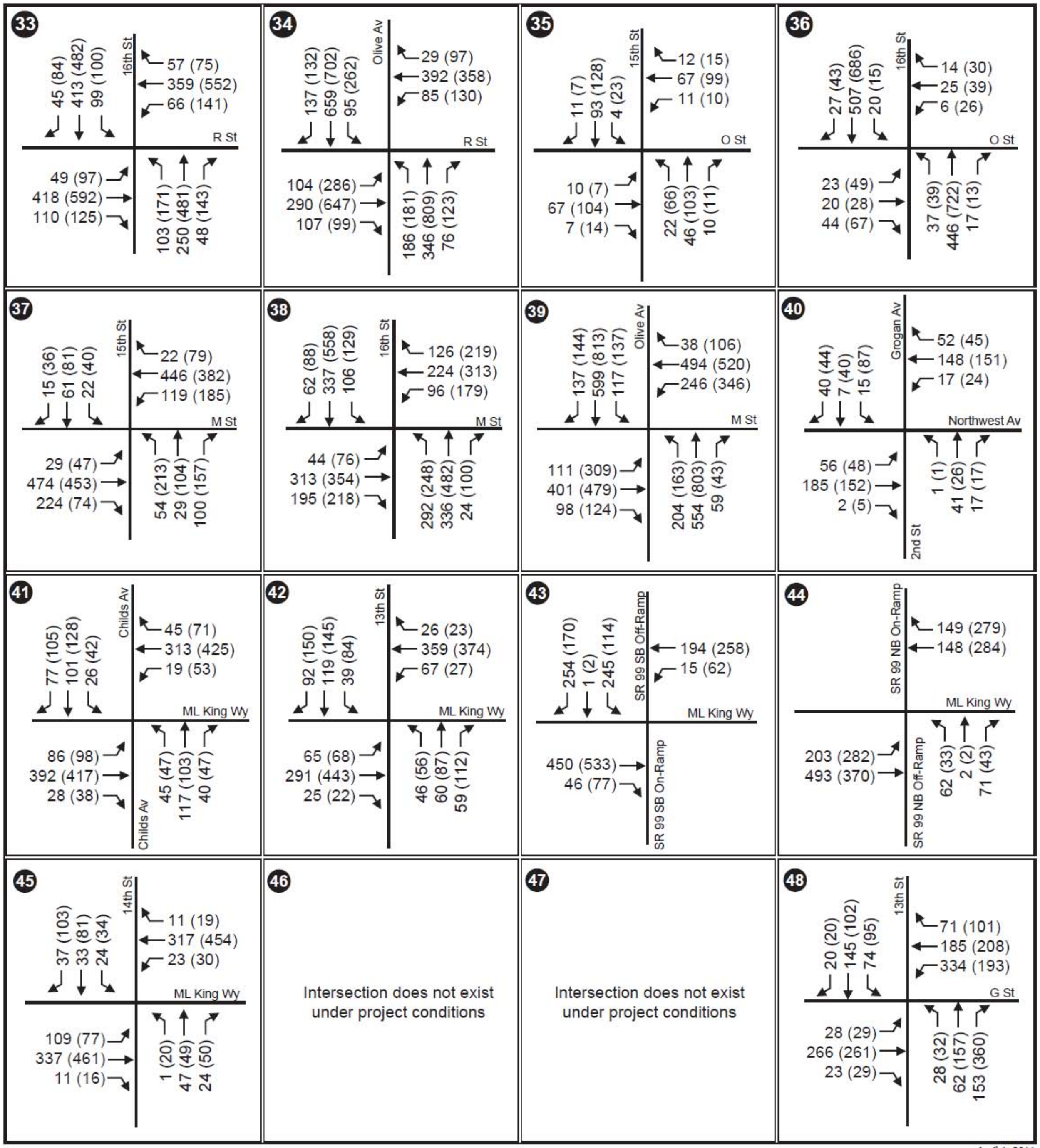


Figure 6.11-2(c)
Existing with Project Volumes – Castle Commerce Center HMF (Option A)

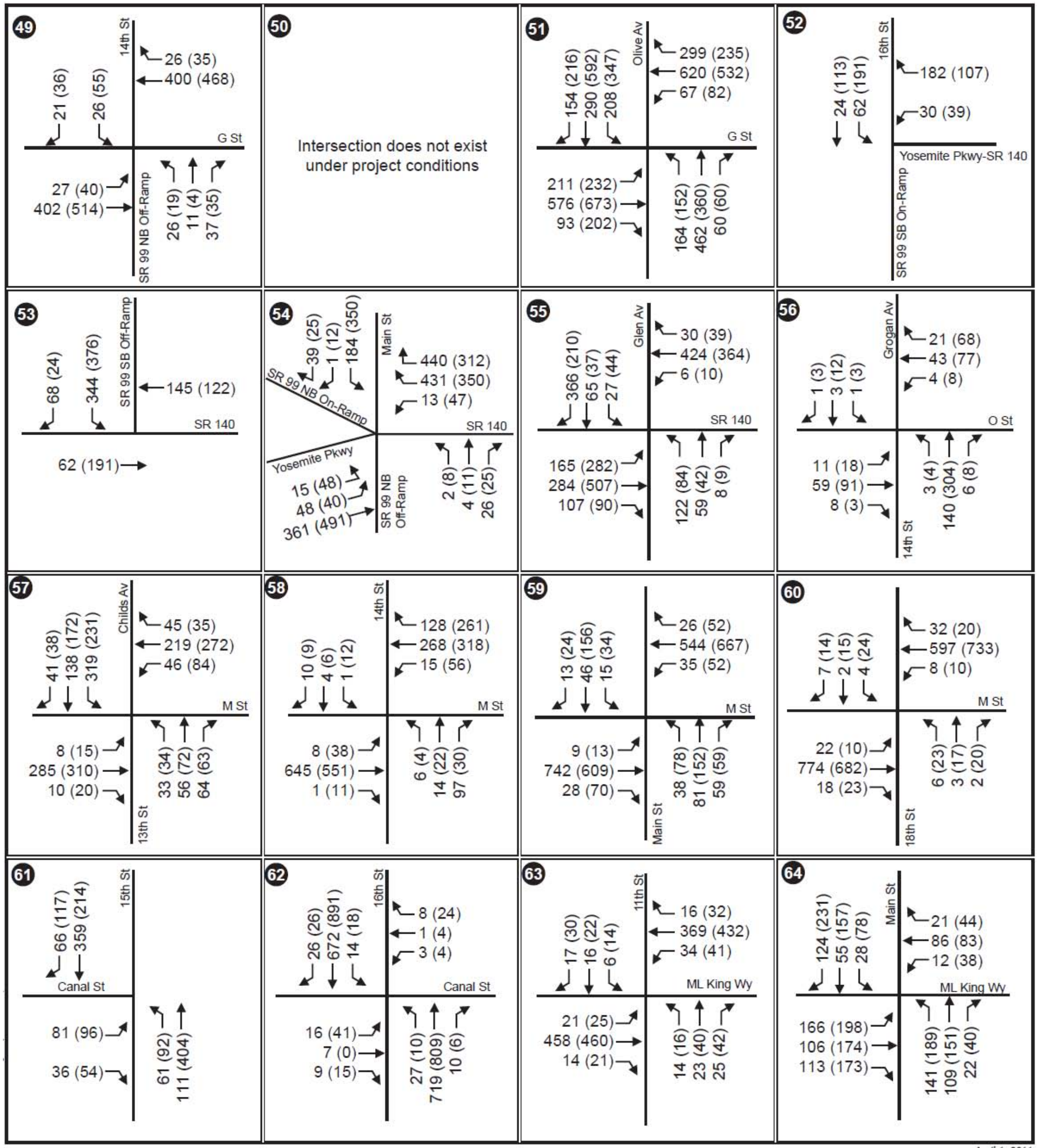


Figure 6.11-2(d)
Existing with Project Volumes – Castle Commerce Center HMF (Option A)

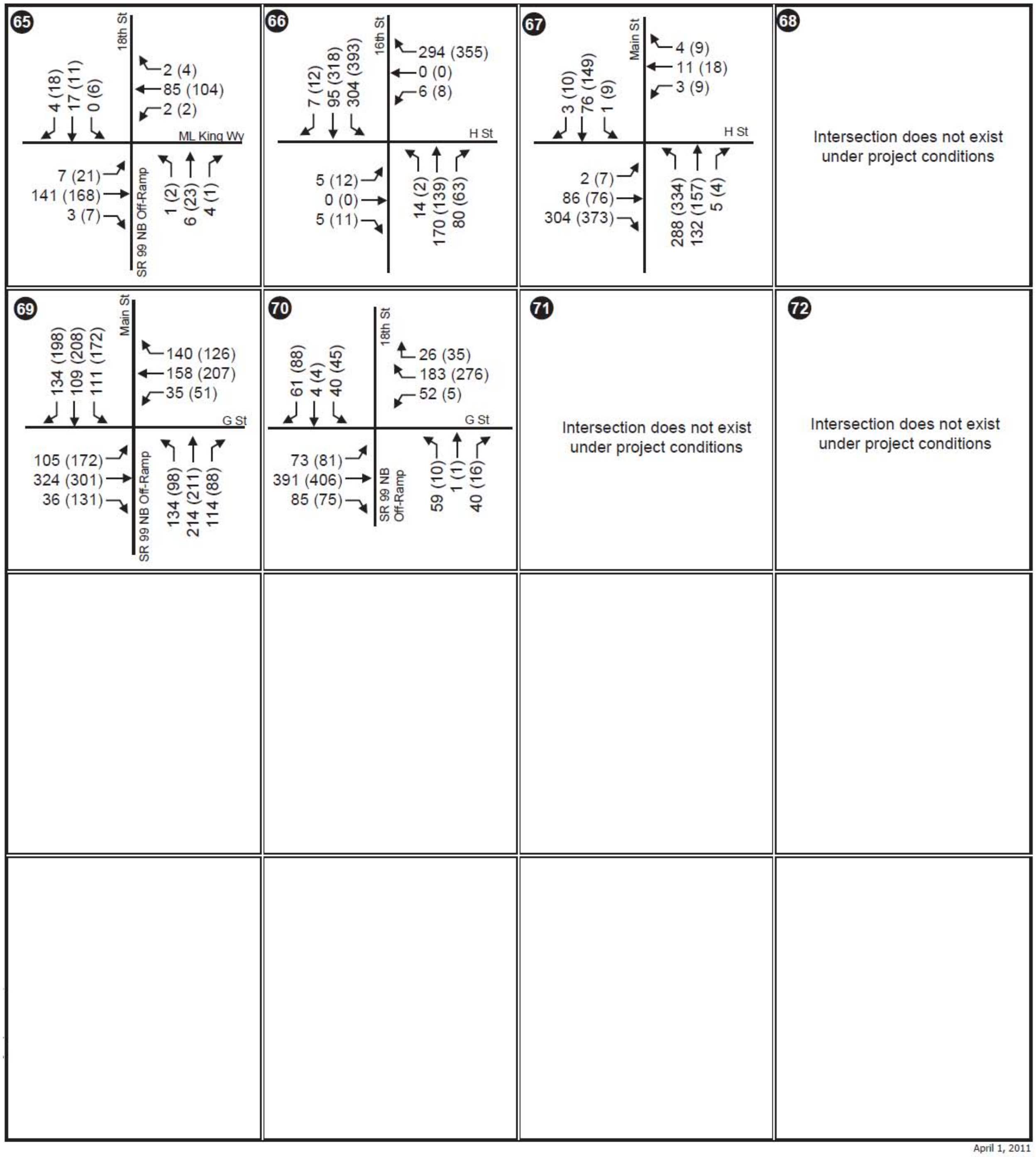
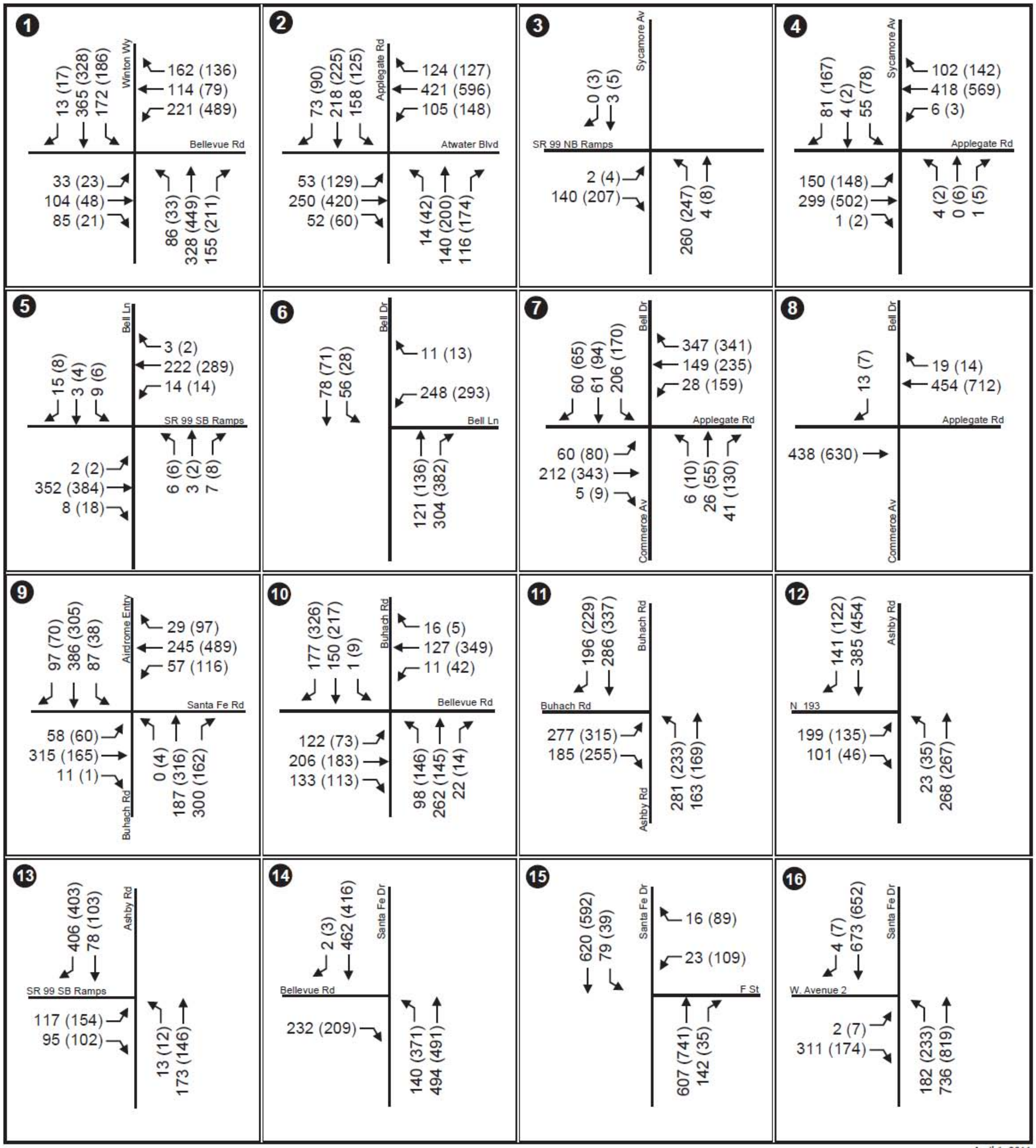
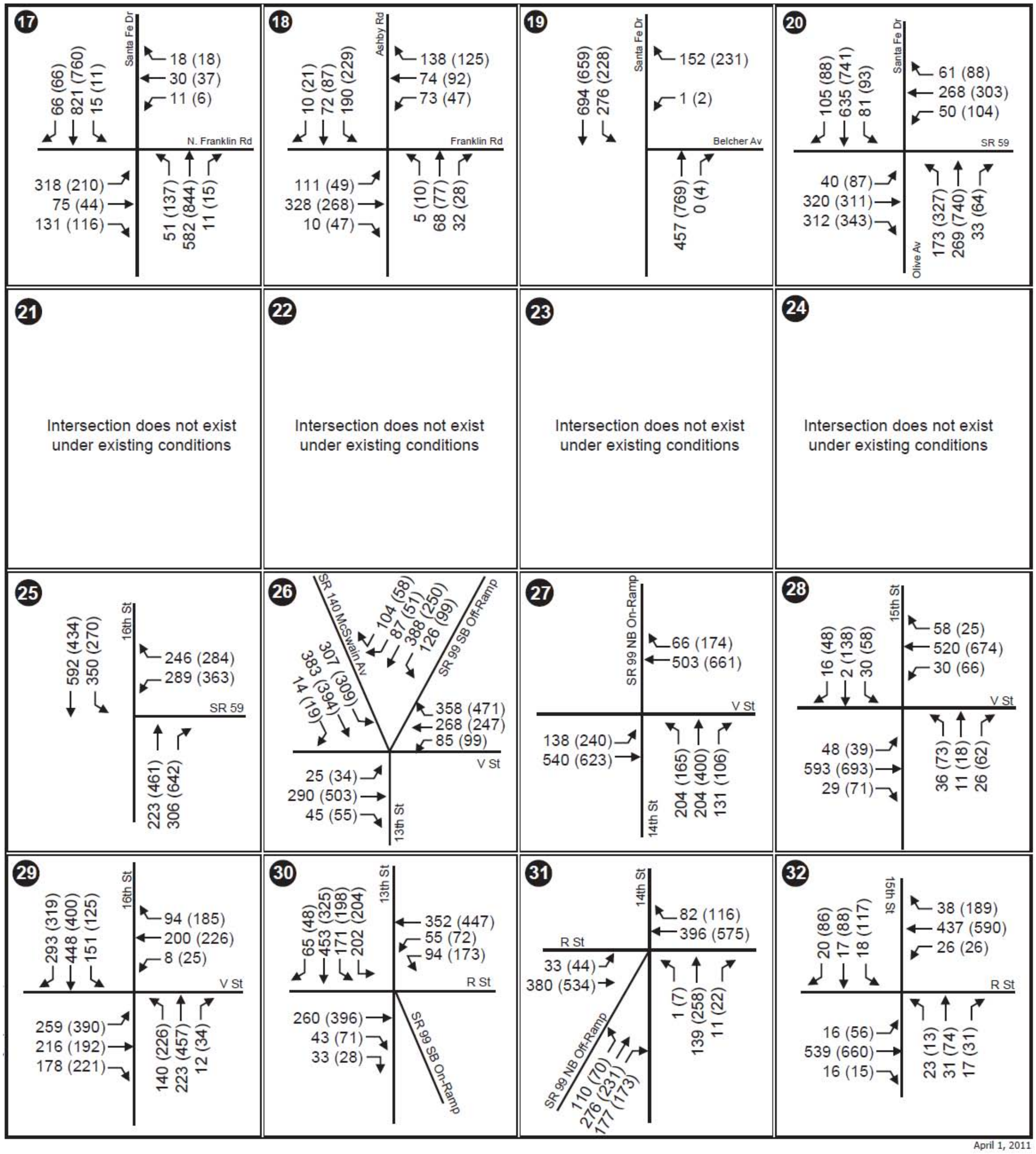


Figure 6.11-2(e)
Existing with Project Volumes – Castle Commerce Center HMF (Option A)



xx (xx) AM (PM) Peak Hour Volumes

Figure 6.11-3(a)
Existing with Project Volumes – Castle Commerce Center HMF (Option B)



xx (xx) AM (PM) Peak Hour Volumes

Figure 6.11-3(b)
Existing with Project Volumes – Castle Commerce Center HMF (Option B)

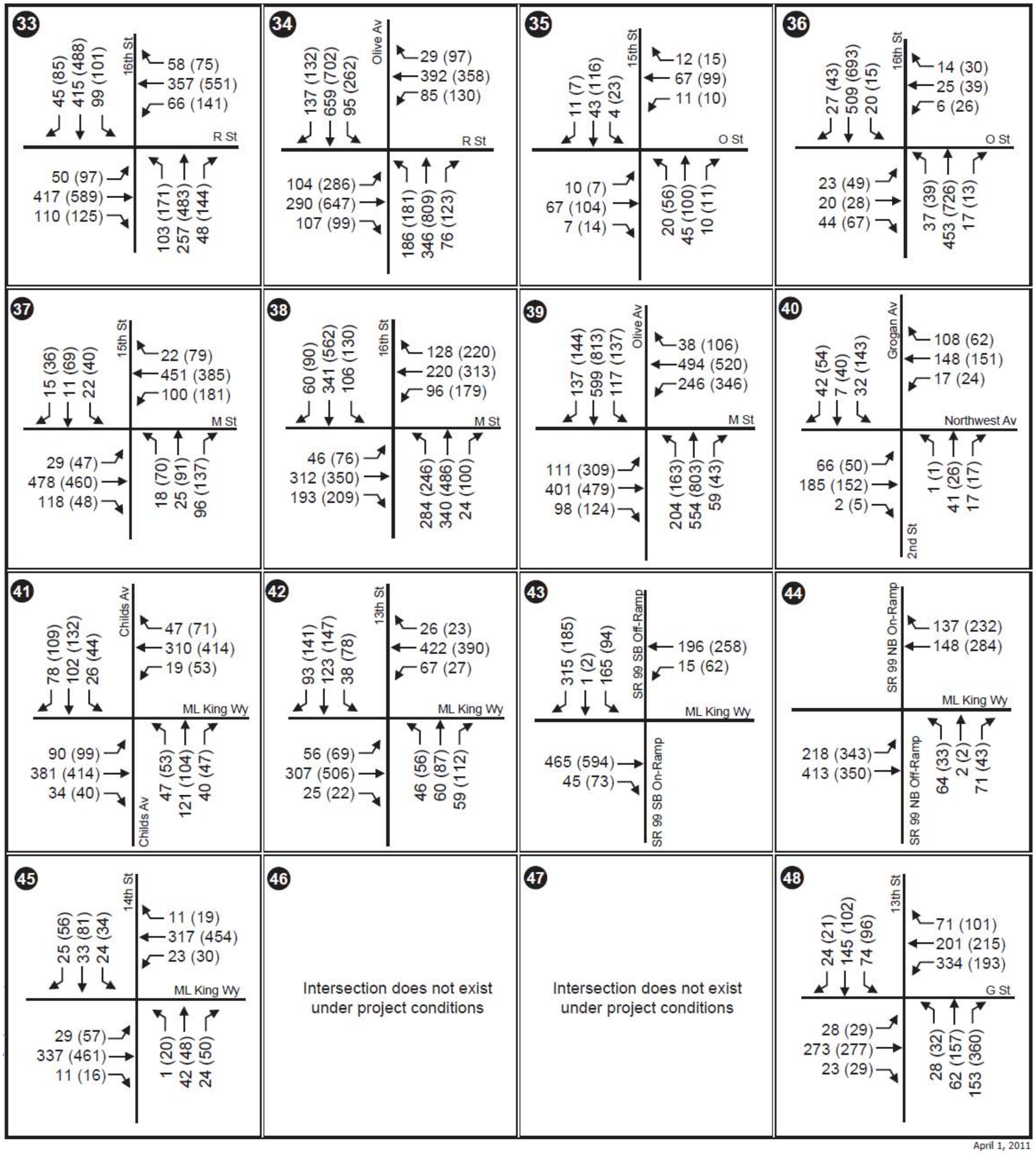


Figure 6.11-3(c)
Existing with Project Volumes – Castle Commerce Center HMF (Option B)

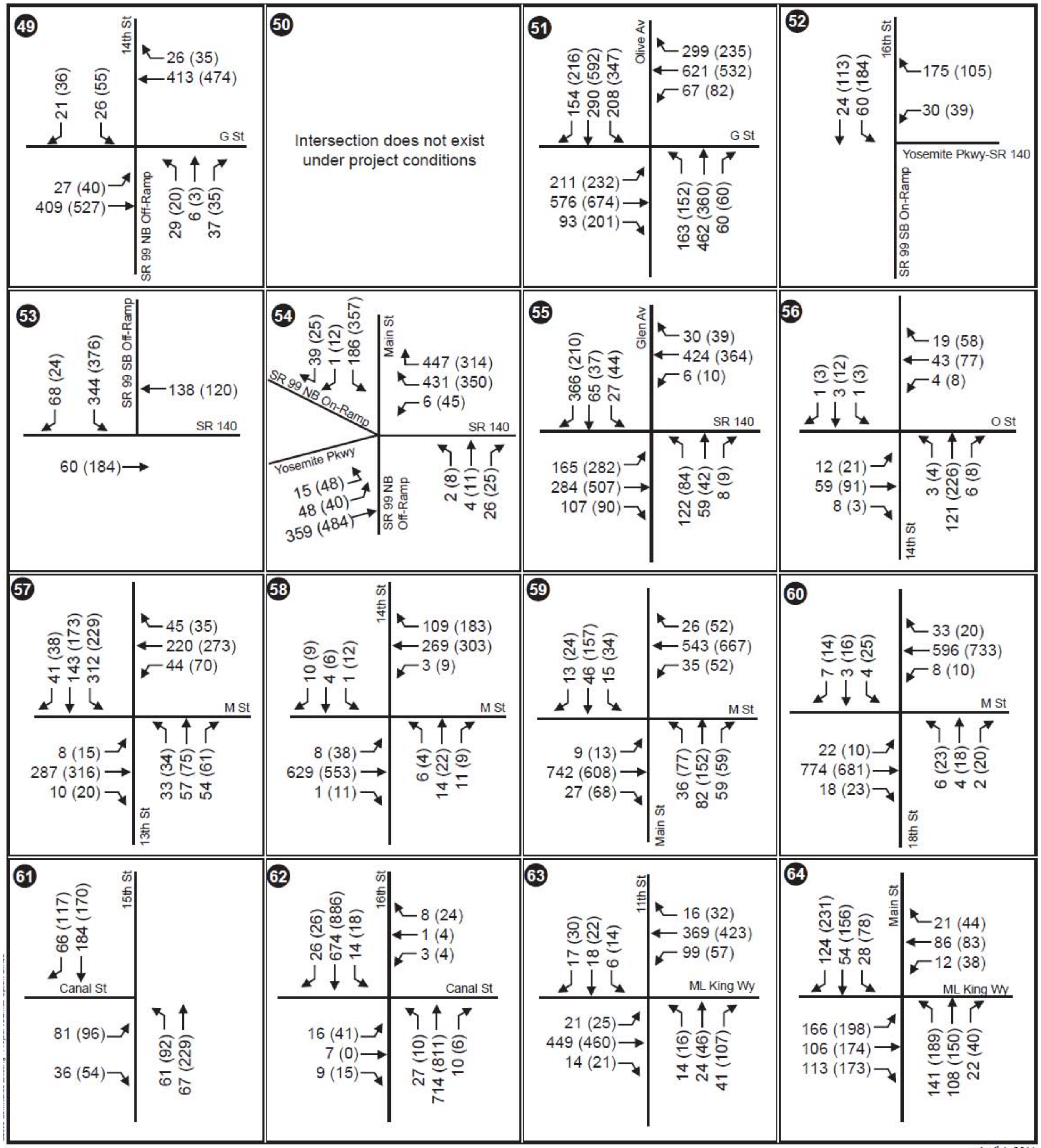


Figure 6.11-3(d)
Existing with Project Volumes – Castle Commerce Center HMF (Option B)

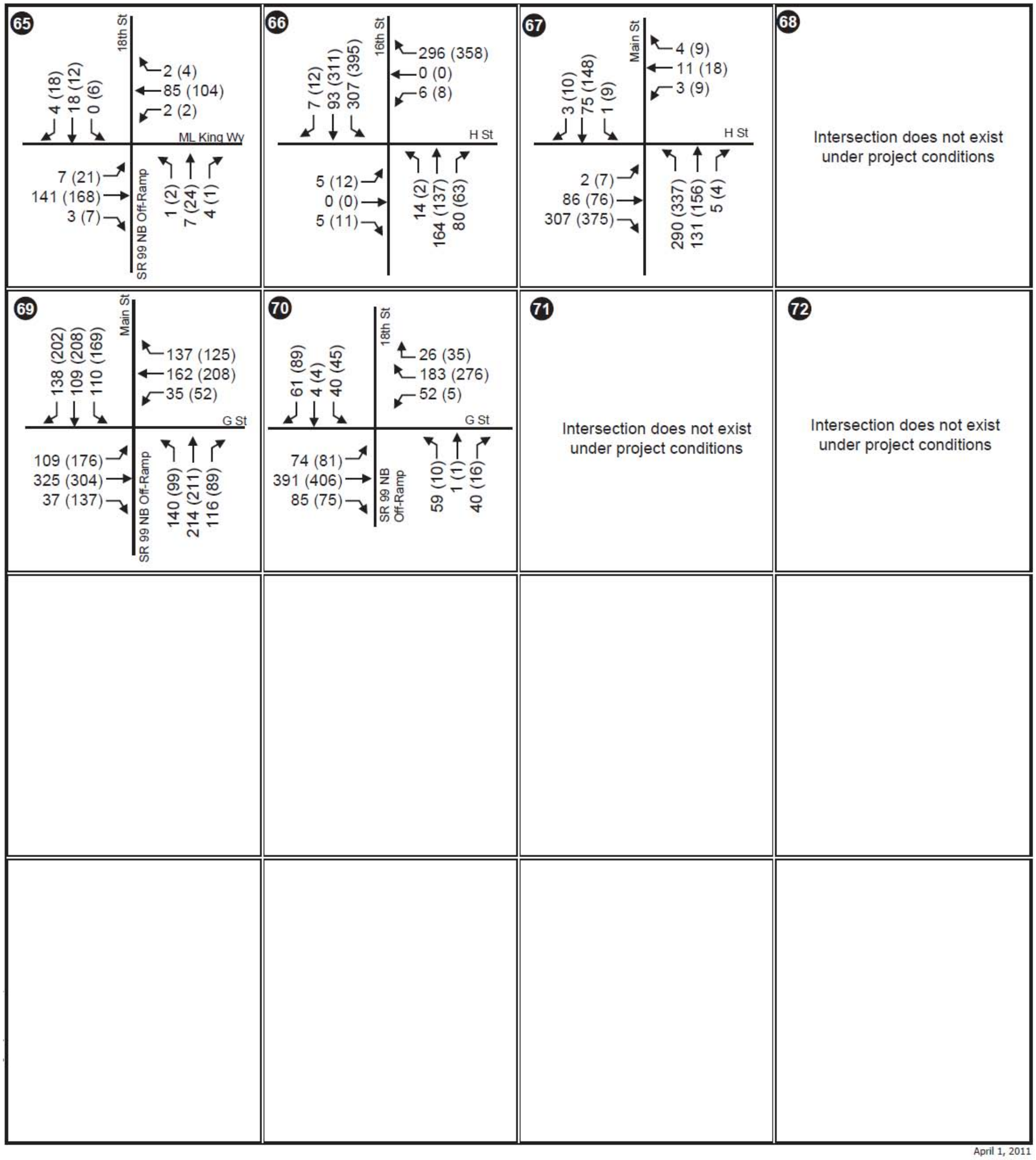


Figure 6.11-3(e)
Existing with Project Volumes – Castle Commerce Center HMF (Option B)

Table 6.11-1
Existing with Project Intersection Operating Conditions –
Castle Commerce Center HMF – Option A

		Existing		Existing plus HST			Existing		Existing plus HST		
		AM Peak		AM Peak			PM Peak		PM Peak		
	Intersection	LOS	Delay (sec)	LOS	Delay (sec)	Impact	LOS	Delay (sec)	LOS	Delay (sec)	Impact
1	N Winton Way / Bellevue Rd	C	27.7	C	29.8	No	C	28.5	C	31.7	No
2	Atwater Blvd / Applegate Rd	C	29.6	C	30.1	No	C	31.5	D	35.6	No
3	Sycamore Ave / SR 99 NB Ramps[a]	A	8.9	A	8.9	No	A	9.2	A	9.3	No
4	Sycamore Ave / Applegate Rd	C	20.0	C	20.6	No	C	23.1	C	27.1	No
5	Bell Ln / Bell Dr / SR 99 SB Ramps	C	24.4	C	24.3	No	C	24.4	C	24.7	No
6	Bell Dr / Bell Ln	C	20.0	B	19.7	No	B	19.4	B	18.9	No
7	Bell Ln – Commerce Ave / Applegate Rd	C	26.8	C	26.5	No	C	31.0	C	28.8	No
8	Mall Access / Applegate Rd[a]	A	9.0	A	9.2	No	A	9.3	A	9.8	No
9	N Buhach Rd / Santa Fe Dr / Airdrome Entry	C	21.4	C	24.3	No	C	23.5	C	27.1	No
10	N Buhach Rd / Bellevue Rd	C	25.2	C	28.0	No	C	27.2	C	29.1	No
11	Ashby Rd / Buhach Rd[a]	F	>50	F	>50	Yes	F	>50	F	>50	Yes
12	Ashby Rd / N 193[a]	D	25.6	D	31.8	No	C	19.9	C	24.4	No
13	Ashby Rd / SR 99 SB Ramps[a]	B	10.9	B	11.1	No	B	11.3	B	11.4	No
14	Santa Fe Dr / Bellevue Rd	B	15.2	B	13.3	No	B	10.9	B	10.7	No
15	Santa Fe Dr / F St	A	7.4	A	7.1	No	A	8.8	A	8.1	No
16	Santa Fe Dr / W Ave 2[a]	C	15.0	C	15.7	No	B	13.8	B	15.0	No
17	Santa Fe Dr / N Franklin Rd	B	17.0	C	23.4	No	B	16.0	B	19.2	No

Intersection		Existing AM Peak		Existing plus HST AM Peak		Impact	Existing PM Peak		Existing plus HST PM Peak		Impact
		LOS	Delay (sec)	LOS	Delay (sec)		LOS	Delay (sec)	LOS	Delay (sec)	
18	Ashby Rd / Franklin Rd[a]	B	11.7	C	15.8	No	B	12.5	B	14.4	No
19	Santa Fe Dr / Belcher Ave[a]	B	10.6	B	11.0	No	B	14.6	C	15.2	No
20	Santa Fe Dr / W Olive Ave / SR 59	D	35.4	D	35.5	No	D	39.4	D	39.9	No
21	Santa Fe Dr/ AM Express SB Ramps	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
22	Santa Fe Dr/ AM Express NB Ramps	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
23	SR 99 NB Ramps/AM Express	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
24	SR 99 SB Ramps/AM Express	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
25	16th St / SR 59[a]	C	16.3	C	17.0	No	F	>50	F	>50	Yes
26	13th St - SR 99 SB Off-ramp / V St	C	32.2	D	35.6	No	C	33.1	D	35.8	No
27	14th St - SR 99 NB On-ramp / V St	B	18.6	B	18.9	No	B	18.0	C	20.8	No
28	15th St / V St	B	16.7	B	16.1	No	C	25.0	C	24.6	No
29	16th St / V St	C	21.5	C	21.8	No	C	27.0	C	28.2	No
30	13th St / R St	B	14.3	B	14.8	No	B	15.0	B	15.6	No
31	SR 99 NB Off-ramp - 14th St / R St	B	20.0	C	21.3	No	B	19.0	C	22.9	No
32	15th St / R St	B	17.1	B	16.5	No	C	25.2	C	24.9	No
33	16th St / R St	C	31.8	C	32.2	No	C	33.7	C	33.9	No
34	Olive Ave / R St	D	50.9	D	50.9	No	E	56.2	E	56.2	No
35	15th St / O St[a]	A	7.6	A	7.9	No	A	8.5	A	8.9	No
36	16th St / O St[a]	C	21.1	B	19.1	No	B	19.8	B	18.5	No
37	15th St / M St[a]	B	11.0	F	>50	Yes	B	12.7	F	>50	Yes
38	16th St / M St	C	32.9	D	35.4	No	C	33.7	D	37.1	No

Intersection		Existing		Existing plus HST		Impact	Existing		Existing plus HST		Impact
		AM Peak		AM Peak			PM Peak		PM Peak		
		LOS	Delay (sec)	LOS	Delay (sec)		LOS	Delay (sec)	LOS	Delay (sec)	
39	Olive Ave / M St	D	54.5	D	54.5	No	E	58.6	E	58.6	No
40	2nd St / Grogan Ave / Northwest Ave[a]	A	9.8	A	9.8	No	B	10.0	B	10.0	No
41	Childs Ave / Martin Luther King Jr. Way	D	39.2	D	38.3	No	D	41.2	D	40.8	No
42	13th St / Martin Luther King Jr. Way	C	25.7	C	28.8	No	C	27.4	C	30.4	No
43	SR 99 SB Ramps / Martin Luther King Jr. Way[a]	C	17.2	C	22.9	No	C	17.5	C	17.0	No
44	SR 99 NB Ramps / Martin Luther King Jr. Way[a]	C	19.8	C	21.6	No	C	21.3	C	21.8	No
45	14th St / Martin Luther King Jr. Way[a]	C	16.6	C	20.6	No	C	21.8	F	>50	Yes
46	15th St / Martin Luther King Jr. Way[b]	B	12.4	NA	NA	No	B	14.8	NA	NA	No
47	16th St / Martin Luther King Jr. Way[b]	C	29.1	NA	NA	No	C	31.2	NA	NA	No
48	13th St / G St[a]	B	12.9	E	37.2	Yes	C	15.4	F	>50	Yes
49	SR 99 - 14th St / G St[a]	B	15.0	C	17.7	No	C	17.5	C	21.7	No
50	16th St / G St[c]	C	31.4	NA	NA	No	C	32.8	NA	NA	No
51	Olive Ave / G St	D	46.8	D	46.8	No	D	48.0	D	48.0	No
52	SR 99 SB On-ramp / Yosemite Pkwy (SR 140)[a]	B	12.9	A	9.5	No	D	32.3	B	13.0	No
53	SR 99 SB Off-ramp / Yosemite Pkwy (SR 140)[a]	E	43.9	B	13.9	No	F	85.4	C	16.9	No
54	SR 99 NB Off-ramp / Yosemite Pkwy (SR 140)[a]	F	>50	F	>50	No	F	>50	F	>50	Yes
55	Motel Dr / Glen Ave / Yosemite Pkwy (SR 140)	D	42.6	D	45.0	No	D	36.9	D	38.8	No

	Intersection	Existing AM Peak LOS	Existing AM Peak Delay (sec)	Existing plus HST AM Peak LOS	Existing plus HST AM Peak Delay (sec)	Impact	Existing PM Peak LOS	Existing PM Peak Delay (sec)	Existing plus HST PM Peak LOS	Existing plus HST PM Peak Delay (sec)	Impact
56	14th St / O St [a]	A	9.7	B	11.1	No	B	10.8	C	16.7	No
57	13th St / M St [a]	B	12.7	D	28.6	No	C	15.8	D	29.0	No
58	14th St / M St [a]	B	13.7	C	18.1	No	C	15.5	C	24.8	No
59	Main St / M St	A	9.7	A	9.7	No	B	13.2	B	13.4	No
60	18th St / M St	B	12.2	B	12.2	No	B	13.5	B	13.8	No
61	15th St / Canal St [a, d]	B	10.3	B	10.6	No	B	12.3	B	13.6	No
62	16th St / Canal St [a]	C	22.2	E	35.5	Yes	E	36.7	F	>50	No
63	11th St / Martin Luther King Jr. Way [a]	C	16.8	C	17.6	No	C	21.0	C	21.9	No
64	Main St / Martin Luther King Jr. Way	A	9.5	B	10.2	No	A	9.9	B	11.3	No
65	18th St / Martin Luther King Jr. Way [a]	A	7.7	A	7.7	No	A	8.0	A	8.1	No
66	16th St / H St [e]	B	11.5	C	24.3	No	B	14.4	C	24.1	No
67	Main St / H St [a]	A	10.0	C	21.1	No	B	10.9	E	41.5	Yes
68	15th St / G St [a ,f]	B	13.4	NA	NA	No	C	16.7	NA	NA	No
69	Main St / G St	B	16.8	C	20.8	No	C	20.1	C	24.9	No
70	18th St / G St	A	8.5	A	9.9	No	A	4.5	B	11.2	No
71	15th St / D St [a,f]	B	14.3	NA	NA	No	B	11.5	NA	NA	No
72	16th St / D St [a,c]	C	16.4	NA	NA	No	C	16.7	NA	NA	No

Notes:

[a] Unsignalized intersection.

[b] Intersection does not exist under project conditions because of proposed Martin Luther King Jr. Way overpass.

[c] Intersection does not exist under project conditions because of proposed G Street overpass.

[d] Four-legged intersection converted to T-intersection under project conditions because of Canal Street closure at the HST tracks.

[e] Intersection signalized under project conditions.

[f] Intersection does not exist under project conditions because of proposed D Street closure.

Intersections 21, 22, 23, and 24 exist only under future conditions.

Intersections with impacts are highlighted.

Table 6.11-2
Existing with Project Intersection Operating Conditions
near Proposed Castle Commerce HMF Site – Option B

		Existing		Existing plus HST			Existing		Existing plus HST		
		AM Peak		AM Peak			PM Peak		PM Peak		
Intersection		LOS	Delay (sec)	LOS	Delay (sec)	Impact	LOS	Delay (sec)	LOS	Delay (sec)	Impact
1	N Winton Way / Bellevue Rd	C	27.7	C	29.8	No	C	28.5	C	31.7	No
2	Atwater Blvd / Applegate Rd	C	29.6	C	30.1	No	C	31.5	D	35.6	No
3	Sycamore Ave / SR 99 NB Ramps[a]	A	8.9	A	8.9	No	A	9.2	A	9.3	No
4	Sycamore Ave / Applegate Rd	C	20.0	C	20.6	No	C	23.1	C	27.1	No
5	Bell Ln / Bell Dr / SR 99 SB Ramps	C	24.4	C	24.3	No	C	24.4	C	24.7	No
6	Bell Dr / Bell Ln	C	20.0	B	19.7	No	B	19.4	B	18.9	No
7	Bell Ln – Commerce Ave / Applegate Rd	C	26.8	C	26.5	No	C	31.0	C	28.8	No
8	Mall Access / Applegate Rd[a]	A	9.0	A	9.2	No	A	9.3	A	9.8	No
9	N Buhach Rd / Santa Fe Dr / Airdrome Entry	C	21.4	C	24.3	No	C	23.5	C	27.1	No
10	N Buhach Rd / Bellevue Rd	C	25.2	C	28.0	No	C	27.2	C	29.1	No
11	Ashby Rd / Buhach Rd[a]	F	>50	F	>50	Yes	F	>50	F	>50	Yes
12	Ashby Rd / N 193[a]	D	25.6	D	31.8	No	C	19.9	C	24.4	No
13	Ashby Rd / SR 99 SB Ramps[a]	B	10.9	B	11.1	No	B	11.3	B	11.4	No
14	Santa Fe Dr / Bellevue Rd	B	15.2	B	13.3	No	B	10.9	B	10.7	No
15	Santa Fe Dr / F St	A	7.4	A	7.1	No	A	8.8	A	8.1	No
16	Santa Fe Dr / W Ave 2[a]	C	15.0	C	15.7	No	B	13.8	B	15.0	No
17	Santa Fe Dr / N Franklin Rd	B	17.0	C	23.4	No	B	16.0	B	19.2	No

		Existing		Existing plus HST			Existing		Existing plus HST		
		AM Peak		AM Peak			PM Peak		PM Peak		
Intersection		LOS	Delay (sec)	LOS	Delay (sec)	Impact	LOS	Delay (sec)	LOS	Delay (sec)	Impact
18	Ashby Rd / Franklin Rd[a]	B	11.7	C	15.8	No	B	12.5	B	14.4	No
19	Santa Fe Dr / Belcher Ave[a]	B	10.6	B	11.0	No	B	14.6	C	15.2	No
20	Santa Fe Dr / W Olive Ave / SR 59	D	35.4	D	35.5	No	D	39.4	D	39.9	No
21	Santa Fe Dr/ AM Express SB Ramps	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
22	Santa Fe Dr/ AM Express NB Ramps	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
23	SR 99 NB Ramps/AM Express	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
24	SR 99 SB Ramps/AM Express	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
25	16th St / SR 59[a]	C	16.3	C	17.0	No	F	>50	F	>50	Yes
26	13th St - SR 99 SB Off-ramp / V St	C	32.2	D	36.4	No	C	33.1	D	36.7	No
27	14th St - SR 99 NB On-ramp / V St	B	18.6	B	18.8	No	B	18.0	C	20.9	No
28	15th St / V St	B	16.7	B	15.8	No	C	25.0	C	24.3	No
29	16th St / V St	C	21.5	C	22.1	No	C	27.0	C	28.7	No
30	13th St / R St	B	14.3	B	14.8	No	B	15.0	B	15.6	No
31	SR 99 NB Off-ramp - 14th St / R St	B	20.0	C	21.2	No	B	19.0	C	21.9	No
32	15th St / R St	B	17.1	B	16.8	No	C	25.2	C	24.9	No
33	16th St / R St	C	31.8	C	32.2	No	C	33.7	C	33.9	No
34	Olive Ave / R St	D	50.9	D	50.9	No	E	56.2	E	56.2	No
35	15th St / O St[a]	A	7.6	A	7.7	No	A	8.5	A	8.8	No
36	16th St / O St[a]	C	21.1	B	19.0	No	B	19.8	B	18.4	No
37	15th St / M St[a]	B	11.0	D	30.9	No	B	12.7	F	>50	Yes

		Existing		Existing plus HST			Existing		Existing plus HST		
		AM Peak		AM Peak			PM Peak		PM Peak		
Intersection		LOS	Delay (sec)	LOS	Delay (sec)	Impact	LOS	Delay (sec)	LOS	Delay (sec)	Impact
38	16th St / M St	C	32.9	D	35.4	No	C	33.7	D	37.0	No
39	Olive Ave / M St	D	54.5	D	54.5	No	E	58.6	E	58.6	No
40	2nd St / Grogan Ave / Northwest Ave[a]	A	9.8	A	10.0	No	B	10.0	B	10.6	No
41	Childs Ave / Martin Luther King Jr. Way	D	39.2	D	38.8	No	D	41.2	D	41.6	No
42	13th St / Martin Luther King Jr. Way	C	25.7	C	28.1	No	C	27.4	C	30.1	No
43	SR 99 SB Ramps / Martin Luther King Jr. Way[a]	C	17.2	C	18.3	No	C	17.5	C	16.2	No
44	SR 99 NB Ramps / Martin Luther King Jr. Way[a]	C	19.8	C	20.3	No	C	21.3	D	25.9	No
45	14th St / Martin Luther King Jr. Way[a]	C	16.6	C	16.5	No	C	21.8	E	46.6	Yes
46	15th St / Martin Luther King Jr. Way[b]	B	12.4	NA	NA	No	B	14.8	NA	NA	No
47	16th St / Martin Luther King Jr. Way[b]	C	29.1	NA	NA	No	C	31.2	NA	NA	No
48	13th St / G St[a]	B	12.9	E	41.6	Yes	C	15.4	F	>50	Yes
49	SR 99 - 14th St / G St[a]	B	15.0	C	17.6	No	C	17.5	C	22.0	No
50	16th St / G Street[c]	C	31.4	NA	NA	No	C	32.8	NA	NA	No
51	Olive Ave / G St	D	46.8	D	46.8	No	D	48.0	D	48.0	No
52	SR 99 SB On-ramp / Yosemite Pkwy (SR 140)[a]	B	12.9	A	9.5	No	D	32.3	B	12.8	No
53	SR 99 SB Off-ramp / Yosemite Pkwy	E	43.9	B	13.7	No	F	>50	C	16.6	No

	Intersection	Existing AM Peak LOS	Existing AM Peak Delay (sec)	Existing plus HST AM Peak LOS	Existing plus HST AM Peak Delay (sec)	Impact	Existing PM Peak LOS	Existing PM Peak Delay (sec)	Existing plus HST PM Peak LOS	Existing plus HST PM Peak Delay (sec)	Impact
	(SR 140)[a]										
54	SR 99 NB Off-ramp / Yosemite Pkwy (SR 140)[a]	F	>50	F	>50	No	F	>50	F	>50	Yes
55	Motel Dr / Glen Ave / Yosemite Pkwy (SR 140)	D	42.6	D	45.0	No	D	36.9	D	38.8	No
56	14th St / O St[a]	A	9.7	B	10.9	No	B	10.8	B	14.3	No
57	13th St / M St[a]	B	12.7	D	27.9	No	C	15.8	D	28.2	No
58	14th St / M St[a]	B	13.7	C	19.3	No	C	15.5	C	23.1	No
59	Main St / M St	A	9.7	A	9.7	No	B	13.2	B	13.4	No
60	18th St / M St	B	12.2	B	12.3	No	B	13.5	B	13.8	No
61	15th St / Canal St[a, d]	B	10.3	A	8.6	No	B	12.3	B	10.2	No
62	16th St / Canal St[a]	C	22.2	E	35.5	Yes	E	36.7	F	>50	No
63	11th St / Martin Luther King Jr. Way[a]	C	16.8	C	19.8	No	C	21.0	C	21.9	No
64	Main St / Martin Luther King Jr. Way	A	9.5	B	10.2	No	A	9.9	B	11.3	No
65	18th St / Martin Luther King Jr. Way[a]	A	7.7	A	7.7	No	A	8.0	A	8.1	No
66	16th St / H St[e]	B	11.5	C	24.2	No	B	14.4	C	24.1	No
67	Main St / H St[a]	A	10.0	C	21.3	No	B	10.9	E	42.5	Yes
68	15th St / G St[a,f]	B	13.4	NA	NA	No	C	16.7	NA	NA	No
69	Main St / G St	B	16.8	C	20.9	No	C	20.1	C	25.1	No
70	18th St / G St	A	8.5	A	9.9	No	A	4.5	B	11.2	No
71	15th St / D St[a,f]	B	14.3	NA	NA	No	B	11.5	NA	NA	No
72	16th St / D St[a,c]	C	16.4	NA	NA	No	C	16.7	NA	NA	No

Notes:

[a] Unsignalized intersection.

Intersection	Existing AM Peak LOS	Existing AM Peak Delay (sec)	Existing plus HST AM Peak LOS	Existing plus HST AM Peak Delay (sec)	Impact	Existing PM Peak LOS	Existing PM Peak Delay (sec)	Existing plus HST PM Peak LOS	Existing plus HST PM Peak Delay (sec)	Impact

[b] Intersection does not exist under project conditions because of proposed Martin Luther King Jr. Way overpass.

[c] Intersection does not exist under project conditions because of proposed G Street overpass.

[d] Four-legged intersection converted to T-intersection under project conditions because of Canal Street closure at the HST tracks.

[e] Intersection signalized under project conditions.

[f] Intersection does not exist under project conditions because of proposed D Street closure.

Intersections 21, 22, 23, and 24 exist only under future conditions.

Intersections with impacts are highlighted.

Future Year (2035) Plus Project Conditions

The project volumes for the AM and PM peak hours were added to the future year (2035) No Project volumes to obtain future year (2035) with project volumes, which are presented in Figures 6.11-3(a) through 6.11-3(e) for Option A and 6.11-4(a) through 6.11-4(e) for Option B. Future year (2035) intersection geometry presented in Figure 5.3-5 was used for future year with project analysis conditions.

Based on the future year geometry and future year with project volumes, intersection analysis was performed for the AM and PM peak hours. The result of the analysis compared against the future year (2035) No Project conditions is presented in Table 6.11-3 for Option A and Table 6.11-4 for Option B. Project traffic impacts at study intersections were identified based on the Authority traffic impact criteria guidelines presented in Section 6.4. Intersections with project impacts are highlighted in table. It can be noted from Table 6.11-3 that 25 intersections would be affected by project-related additional traffic under Option A and 22 intersections would be affected by under Option B, which would result in a substantial impact under NEPA and a significant impact under CEQA.

Table 6.11-3
Future Year (2035) Intersection Level of Service Summary
near Proposed Castle Commerce HMF Site – Option A

	Intersection	AM Peak Hour 2035 No Project LOS	AM Peak Hour 2035 No Project Delay (sec)	AM Peak Hour 2035 plus HST LOS	AM Peak Hour 2035 plus HST Delay (sec)	Impact	PM Peak Hour 2035 No Project LOS	PM Peak Hour 2035 No Project Delay (sec)	PM Peak Hour 2035 plus HST LOS	PM Peak Hour 2035 plus HST Delay (sec)	Impact
1	N Winton Way / Bellevue Rd	C	30.1	C	30.2	No	D	43.2	D	45.3	No
2	Atwater Blvd / Applegate Rd	D	44.7	D	46.4	No	F	>80	F	>80	Yes
3	Sycamore Ave / SR 99 NB Ramps[a]	A	9.9	A	9.9	No	B	11.3	B	11.3	No
4	Sycamore Ave /	D	36.9	D	38.4	No	F	>80	F	>80	Yes

	Intersection	AM Peak Hour				Impact	PM Peak Hour				Impact
		2035 No Project		2035 plus HST			2035 No Project		2035 plus HST		
		LOS	Delay (sec)	LOS	Delay (sec)		LOS	Delay (sec)	LOS	Delay (sec)	
	Applegate Rd										
5	Bell Ln / Bell Dr / SR 99 SB Ramps	C	24.6	C	24.8	No	C	25.0	C	25.0	No
6	Bell Dr / Bell Ln	C	20.9	C	21.1	No	C	20.8	C	20.9	No
7	Bell Ln – Commerce Ave / Applegate Rd	C	28.4	C	29.1	No	C	32.4	C	32.8	No
8	Mall Access / Applegate Rd[a]	B	10.1	B	10.1	No	B	11.0	B	11.0	No
9	N Buhach Rd / Santa Fe Dr / Airdrome Entry	C	22.7	C	28.2	No	C	26.0	C	30.2	No
10	N Buhach Rd / Bellevue Rd	C	28.1	C	28.4	No	C	30.9	C	31.3	No
11	Ashby Rd / Buhach Rd[a]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12	Ashby Rd / N 193[a]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
13	Ashby Rd / SR 99 SB Ramps[a]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
14	Santa Fe Dr / Bellevue Rd	B	19.1	B	18.2	No	B	12.7	B	15.5	No
15	Santa Fe Dr / F St	A	8.8	A	8.5	No	B	12.9	B	12.0	No
16	Santa Fe Dr / W Ave 2[a]	F	>50	F	>50	Yes	F	>50	F	>50	Yes
17	Santa Fe Dr / N Franklin Rd	E	56.0	E	57.3	No	D	46.9	D	48.8	No
18	Ashby Rd / Franklin Rd[a]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
19	Santa Fe Dr / Belcher Ave[a]	C	20.5	C	22.4	No	F	>50	F	>50	Yes
20	Santa Fe Dr / W Olive Ave / SR 59	E	56.2	E	57.6	No	F	>80	F	>80	Yes
21	Santa Fe Dr/ AM Express SB Ramps	C	21.8	D	44.0	No	C	23.9	D	38.5	No
22	Santa Fe Dr/ AM Express NB Ramps	B	19.7	D	41.6	No	C	21.2	C	29.1	No
23	SR 99 NB Ramps/AM Express	C	21.0	D	37.4	No	B	16.5	C	20.3	No
24	SR 99 SB Ramps/AM Express	C	20.0	C	20.9	No	B	18.5	B	18.9	No
25	16th St / SR 59[a]	F	>50	F	>50	Yes	F	>50	F	>50	Yes

		AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 plus HST			2035 No Project		2035 plus HST		
	Intersection	LOS	Delay (sec)	LOS	Delay (sec)	Impact	LOS	Delay (sec)	LOS	Delay (sec)	Impact
26	13th St - SR 99 SB Off-ramp / V St	F	>80	F	>80	Yes	F	>80	F	>80	Yes
27	14th St - SR 99 NB On-ramp / V St	C	23.3	C	23.6	No	C	30.7	D	42.3	No
28	15th St / V St	B	17.2	B	17.1	No	C	28.7	C	28.7	No
29	16th St / V St	E	57.6	E	59.4	No	F	>80	F	>80	Yes
30	13th St / R St	B	17.4	B	18.9	No	C	33.0	D	35.3	No
31	SR 99 NB Off-ramp - 14th St / R St	C	23.1	C	24.1	No	C	24.3	C	30.6	No
32	15th St / R St	B	16.4	B	16.2	No	C	26.5	C	26.6	No
33	16th St / R St	C	33.9	C	34.6	No	D	46.7	D	49.3	No
34	Olive Ave / R St	E	59.5	E	59.6	No	F	>80	F	>80	No
35	15th St / O St[a]	A	8.6	A	9.0	No	B	11.5	B	12.5	No
36	16th St / O St[a]	C	21.0	C	20.1	No	C	22.1	C	21.8	No
37	15th St / M St[a]	F	>50	F	>50	Yes	F	>50	F	>50	Yes
38	16th St / M St	D	36.0	D	44.1	No	D	43.8	E	74.5	Yes
39	Olive Ave / M St	F	>80	F	>80	No	F	>80	F	>80	No
40	2nd St / Grogan Ave / Northwest Ave[a]	C	16.6	C	16.6	No	C	16.9	C	16.9	No
41	Childs Ave / Martin Luther King Jr. Way	E	56.7	E	58.0	No	F	>80	F	>80	Yes
42	13th St / Martin Luther King Jr. Way	C	26.8	C	32.3	No	C	32.7	D	46.4	No
43	SR 99 SB Ramps / Martin Luther King Jr. Way[a]	F	>50	F	>50	Yes	F	>50	F	>50	No
44	SR 99 NB Ramps / Martin Luther King Jr. Way[a]	F	>50	F	>50	Yes	F	>50	F	>50	Yes
45	14th St / Martin Luther King Jr. Way[a]	F	>50	F	>50	Yes	F	>50	F	OVFL	Yes
46	15th St / Martin Luther King Jr. Way[b]	B	13.9	NA	NA	No	B	17.6	NA	NA	No
47	16th St / Martin Luther King Jr. Way[b]	C	33.3	NA	NA	No	F	80.5	NA	NA	No
48	13th St / G St[a]	F	>50	F	>50	Yes	F	>50	F	>50	Yes
49	SR 99 - 14th St / G St[a]	E	39.6	F	>50	No	F	>50	F	>50	Yes

	Intersection	AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 plus HST		Impact	2035 No Project		2035 plus HST		Impact
		LOS	Delay (sec)	LOS	Delay (sec)		LOS	Delay (sec)	LOS	Delay (sec)	
50	16th St / G Street[c]	D	39.7	NA	NA	No	D	51.6	NA	NA	No
51	Olive Ave / G St	F	>80	F	>80	No	F	>80	F	>80	No
52	SR 99 SB On-ramp / Yosemite Pkwy (SR 140)[a]	C	19.6	C	18.2	No	F	>50	B	15.0	No
53	SR 99 SB Off-ramp / Yosemite Pkwy (SR 140)[a]	F	>50	F	>50	No	F	>50	F	>50	No
54	SR 99 NB Off-ramp / Yosemite Pkwy (SR 140)[a]	F	>50	F	>50	Yes	F	OVFL	F	OVFL	Yes
55	Motel Dr / Glen Ave / Yosemite Pkwy (SR 140)	F	>80	F	>80	Yes	F	>80	F	>80	Yes
56	14th St / O St[a]	B	10.6	B	12.7	No	B	14.0	E	35.1	Yes
57	13th St / M St[a]	F	>50	F	>50	Yes	F	>50	F	>50	Yes
58	14th St / M St[a]	D	26.8	F	>50	Yes	E	42.6	F	>50	No
59	Main St / M St	B	11.8	B	12.0	No	B	18.7	C	21.0	No
60	18th St / M St	B	13.0	B	13.1	No	B	14.4	B	14.6	No
61	15th St / Canal St[a, d]	B	12.1	B	14.3	No	C	21.0	E	42.2	Yes
62	16th St / Canal St[a]	F	>50	F	>50	No	F	>50	F	>50	No
63	11th St / Martin Luther King Jr. Way[a]	F	>50	F	>50	Yes	F	OVFL	F	OVFL	Yes
64	Main St / Martin Luther King Jr. Way	A	9.9	B	12.2	No	B	10.9	C	31.4	No
65	18th St / Martin Luther King Jr. Way[a]	A	8.6	A	9.0	No	A	9.6	A	9.7	No
66	16th St / H St[e]	C	16.2	D	35.9	No	D	28.3	D	53.0	No
67	Main St / H St[a]	B	11.2	F	OVFL	Yes	B	13.6	F	OVFL	Yes
68	15th St / G St[a ,f]	D	27.2	NA	NA	No	F	>50	NA	NA	No
69	Main St / G St	B	18.3	D	38.6	No	C	21.2	E	55.5	Yes
70	18th St / G St	A	9.2	B	11.3	No	A	4.5	B	11.0	No
71	15th St / D St[a,f]	D	32.4	NA	NA	No	C	17.5	NA	NA	No
72	16th St / D St[a,c]	E	39.4	NA	NA	No	E	39.3	NA	NA	No

Notes:

OVFL = Overflow

[a] Unsignalized intersection.

[b] Intersection does not exist under project conditions because of proposed Martin Luther King Jr. Way overpass.

Intersection	AM Peak Hour				Impact	PM Peak Hour				Impact
	2035 No Project		2035 plus HST			2035 No Project		2035 plus HST		
	LOS	Delay (sec)	LOS	Delay (sec)		LOS	Delay (sec)	LOS	Delay (sec)	

[c] Intersection does not exist under project conditions because of proposed G Street overpass.

[d] Four-legged intersection converted to T-intersection under project conditions because of Canal Street closure at the HST tracks.

[e] Intersection signalized under project conditions.

[f] Intersection does not exist under project conditions because of proposed D Street closure.

Intersections 11, 12, 13, and 18 do not exist under future conditions

Intersections with impacts are highlighted.

Table 6.11-4
Future Year (2035) Intersection Level of Service Summary
near Proposed Castle Commerce HMF Site – Option B

Intersection		AM Peak Hour				Impact	PM Peak Hour				Impact
		2035 No Project		2035 plus HST			2035 No Project		2035 plus HST		
		LOS	Delay (sec)	LOS	(sec)		LOS	Delay (sec)	LOS	(sec)	
1	N Winton Way / Bellevue Rd	C	30.1	C	30.2	No	D	43.2	D	45.3	No
2	Atwater Blvd / Applegate Rd	D	44.7	D	46.4	No	F	>80	F	>80	Yes
3	Sycamore Ave / SR 99 NB Ramps[a]	A	9.9	A	9.9	No	B	11.3	B	11.3	No
4	Sycamore Ave / Applegate Rd	D	36.9	D	38.4	No	F	>80	F	>80	Yes
5	Bell Ln / Bell Dr / SR 99 SB Ramps	C	24.6	C	24.8	No	C	25.0	C	25.0	No
6	Bell Dr / Bell Ln	C	20.9	C	21.1	No	C	20.8	C	20.9	No
7	Bell Ln – Commerce Ave / Applegate Rd	C	28.4	C	29.1	No	C	32.4	C	32.8	No
8	Mall Access / Applegate Rd[a]	B	10.1	B	10.1	No	B	11.0	B	11.0	No
9	N Buhach Rd / Santa Fe Dr / Airdrome Entry	C	22.7	C	28.2	No	C	26.0	C	30.2	No
10	N Buhach Rd / Bellevue Rd	C	28.1	C	28.4	No	C	30.9	C	31.3	No
11	Ashby Rd / Buhach Rd[a]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Intersection		AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 plus HST		Impact	2035 No Project		2035 plus HST		Impact
		LOS	Delay (sec)	LOS	(sec)		LOS	Delay (sec)	LOS	(sec)	
12	Ashby Rd / N 193[a]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
13	Ashby Rd / SR 99 SB Ramps[a]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
14	Santa Fe Dr / Bellevue Rd	B	19.1	B	18.2	No	B	12.7	B	15.5	No
15	Santa Fe Dr / F St	A	8.8	A	8.5	No	B	12.9	B	12.0	No
16	Santa Fe Dr / W Ave 2[a]	F	>50	F	>50	Yes	F	>50	F	>50	Yes
17	Santa Fe Dr / N Franklin Rd	E	56.0	E	57.3	No	D	46.9	D	48.8	No
18	Ashby Rd / Franklin Rd[a]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
19	Santa Fe Dr / Belcher Ave[a]	C	20.5	C	22.4	No	F	>50	F	>50	Yes
20	Santa Fe Dr / W Olive Ave / SR 59	E	56.2	E	57.6	No	F	>80	F	>80	Yes
21	Santa Fe Dr/ AM Express SB Ramps	C	21.8	D	44.0	No	C	23.9	D	38.5	No
22	Santa Fe Dr/ AM Express NB Ramps	B	19.7	D	41.6	No	C	21.2	C	29.1	No
23	SR 99 NB Ramps/AM Express	C	21.0	D	37.4	No	B	16.5	C	20.3	No
24	SR 99 SB Ramps/AM Express	C	20.0	C	20.9	No	B	18.5	B	18.9	No
25	16th St / SR 59[a]	F	>50	F	>50	Yes	F	>50	F	>50	Yes
26	13th St - SR 99 SB Off-ramp / V St	F	>80	F	>80	Yes	F	>80	F	>80	Yes
27	14th St - SR 99 NB On-ramp / V St	C	23.3	C	23.8	No	C	30.7	D	45.1	No
28	15th St / V St	B	17.2	B	17.0	No	C	28.7	C	28.7	No
29	16th St / V St	E	57.6	E	61.6	Yes	F	>80	F	>80	Yes
30	13th St / R St	B	17.4	B	18.7	No	C	33.0	C	34.6	No
31	SR 99 NB Off-ramp - 14th St / R St	C	23.1	C	23.8	No	C	24.3	C	28.2	No
32	15th St / R St	B	16.4	B	16.3	No	C	26.5	C	26.6	No
33	16th St / R St	C	33.9	C	34.6	No	D	46.7	D	49.5	No
34	Olive Ave / R St	E	59.5	E	59.6	No	F	>80	F	>80	No
35	15th St / O St[a]	A	8.6	A	8.7	No	B	11.5	B	12.2	No

	Intersection	AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 plus HST		Impact	2035 No Project		2035 plus HST		Impact
		LOS	Delay (sec)	LOS	(sec)		LOS	Delay (sec)	LOS	(sec)	
36	16th St / O St[a]	C	21.0	C	20.0	No	C	22.1	C	21.8	No
37	15th St / M St[a]	F	>50	F	>50	Yes	F	>50	F	>50	Yes
38	16th St / M St	D	36.0	D	43.7	No	D	43.8	E	74.0	Yes
39	Olive Ave / M St	F	>80	F	>80	No	F	>80	F	>80	No
40	2nd St / Grogan Ave / Northwest Ave[a]	C	16.6	C	17.5	No	C	16.9	C	18.7	No
41	Childs Ave / Martin Luther King Jr. Way	E	56.7	E	59.0	No	F	>80	F	>80	Yes
42	13th St / Martin Luther King Jr. Way	C	26.8	C	32.2	No	C	32.7	D	46.9	No
43	SR 99 SB Ramps / Martin Luther King Jr. Way[a]	F	>50	F	>50	No	F	>50	F	>50	No
44	SR 99 NB Ramps / Martin Luther King Jr. Way[a]	F	>50	F	>50	No	F	>50	F	>50	Yes
45	14th St / Martin Luther King Jr. Way[a]	F	>50	F	>50	Yes	F	>50	F	OVFL	Yes
46	15th St / Martin Luther King Jr. Way[b]	B	13.9	NA	NA	No	B	17.6	NA	NA	No
47	16th St / Martin Luther King Jr. Way[b]	C	33.3	NA	NA	No	F	>80	NA	NA	No
48	13th St / G St[a]	F	>50	F	>50	Yes	F	>50	F	>50	Yes
49	SR 99 - 14th St / G St[a]	E	39.6	F	>50	No	F	>50	F	>50	Yes
50	16th St / G St[c]	D	39.7	NA	NA	No	D	51.6	NA	NA	No
51	Olive Ave / G St	F	>80	F	>80	No	F	>80	F	>80	No
52	SR 99 SB On-ramp / Yosemite Pkwy (SR 140)[a]	C	19.6	C	18.1	No	F	406.8	B	14.7	No
53	SR 99 SB Off-ramp / Yosemite Pkwy (SR 140)[a]	F	>50	F	>50	No	F	>50	F	>50	No
54	SR 99 NB Off-ramp / Yosemite Pkwy (SR 140)[a]	F	>50	F	>50	Yes	F	OVFL	F	OVFL	Yes

	Intersection	AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 plus HST		Impact	2035 No Project		2035 plus HST		Impact
		LOS	Delay (sec)	LOS	(sec)		LOS	Delay (sec)	LOS	(sec)	
55	Motel Dr / Glen Ave / Yosemite Pkwy (SR 140)	F	>80	F	>80	Yes	F	>80	F	>80	Yes
56	14th St / O St [a]	B	10.6	B	12.4	No	B	14.0	C	23.9	No
57	13th St / M St [a]	F	>50	F	>50	Yes	F	>50	F	>50	Yes
58	14th St / M St [a]	D	26.8	F	>50	Yes	E	42.6	F	>50	No
59	Main St / M St	B	11.8	B	12.0	No	B	18.7	C	21.0	No
60	18th St / M St	B	13.0	B	13.1	No	B	14.4	B	14.6	No
61	15th St / Canal St [a, d]	B	12.1	B	10.4	No	C	21.0	C	18.9	No
62	16th St / Canal St [a]	F	>50	F	>50	No	F	>50	F	>50	No
63	11th St / Martin Luther King Jr. Way [a]	F	>50	F	>50	Yes	F	OVFL	F	OVFL	Yes
64	Main St / Martin Luther King Jr. Way	A	9.9	B	12.2	No	B	10.9	C	31.2	No
65	18th St / Martin Luther King Jr. Way [a]	A	8.6	A	9.0	No	A	9.6	A	9.8	No
66	16th St / H St [e]	C	16.2	D	36.0	No	D	28.3	D	53.6	No
67	Main St / H St [a]	B	11.2	F	OVFL	Yes	B	13.6	F	OVFL	Yes
68	15th St / G St [a ,f]	D	27.2	NA	NA	No	F	129.0	NA	NA	No
69	Main St / G St	B	18.3	D	39.8	No	C	21.2	E	56.7	Yes
70	18th St / G St	A	9.2	B	11.3	No	A	4.5	B	11.1	No
71	15th St / D St [a,f]	D	32.4	NA	NA	No	C	17.5	NA	NA	No
72	16th St / D St [a,c]	E	39.4	NA	NA	No	E	39.3	NA	NA	No

Notes:

OVFL = Overflow

[a] Unsignalized intersection.

[b] Intersection does not exist under project conditions because of proposed Martin Luther King Jr. Way overpass.

[c] Intersection does not exist under project conditions because of proposed G Street overpass.

[d] Four-legged intersection converted to T-intersection under project conditions because of Canal Street closure at the HST tracks.

[e] Intersection signalized under project conditions.

[f] Intersection does not exist under project conditions because of proposed D Street closure.

Intersections 11, 12, 13, and 18 do not exist under future conditions

Intersections with impacts are highlighted.

6.11.2 Harris-DeJager Heavy Maintenance Facility

6.11.2.1 Harris-DeJager Trip Distribution and Assignment

The trip distribution percentages for the project trips are presented in Figure 6.11-4. Based on the distribution percentages, project volumes were developed for both the AM and PM peak hour conditions.

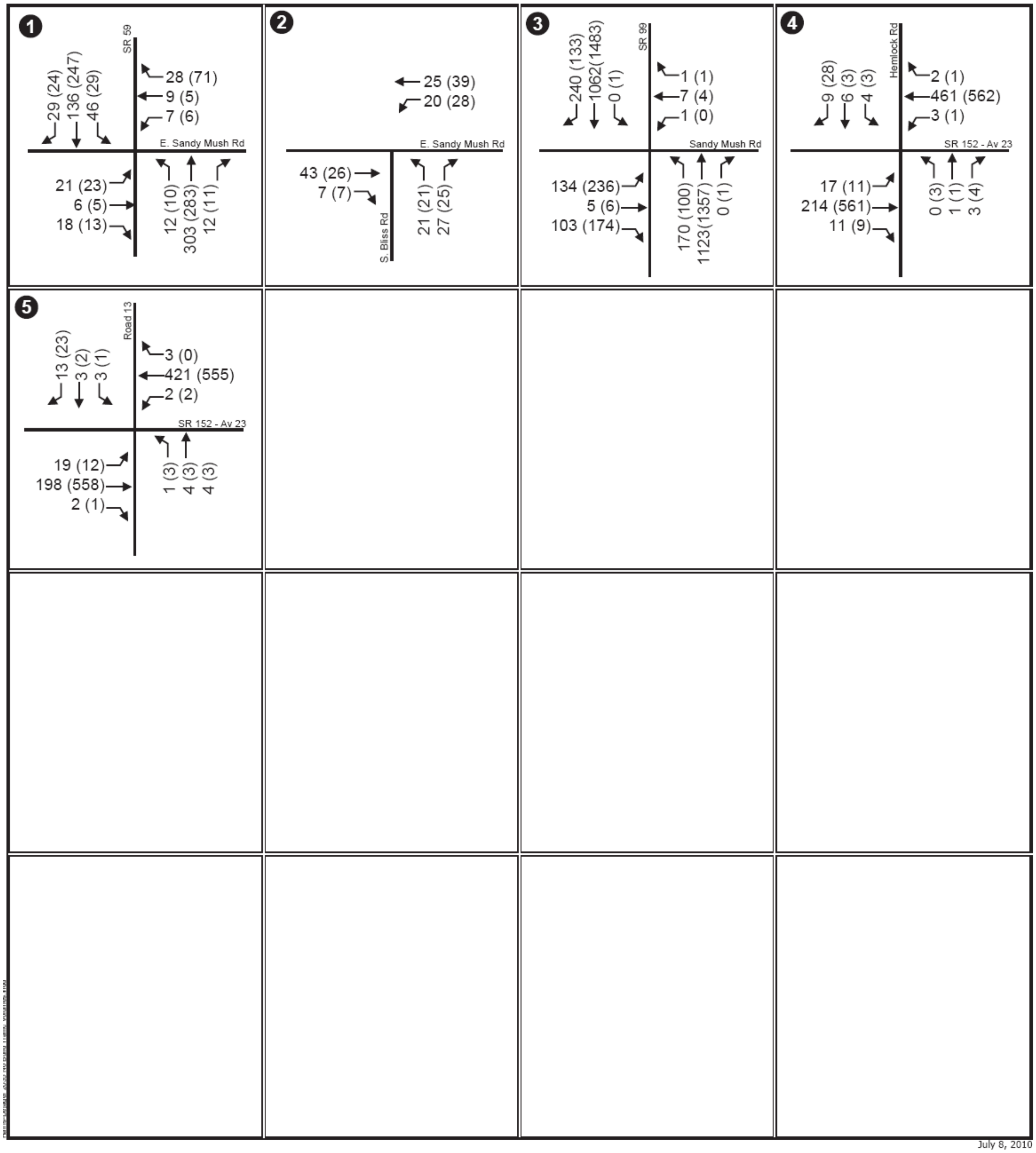
6.11.2.2 Harris-DeJager Intersection Impacts

Existing Plus Project Conditions

The project volumes for the AM and PM peak hours were added to the existing volumes to obtain existing with project volumes, which are presented in Figure 6.11-5.

Based on the existing geometry and existing with project volumes, intersection analysis was performed for the AM and PM peak hours. The result of the analysis compared against the existing conditions is presented in Table 6.11-5 and LOS calculation sheets are presented in Appendix C. Project traffic impacts at study intersections were identified based on the Authority traffic impact criteria guidelines presented in Section 6.4. Intersections with project impacts are highlighted in Table 6.11-5. It can be noted from the table that one of six intersections (Intersections 3, SR 99/Sandy Mush Road) would be impacted by the project-added traffic, which would result in a substantial impact under NEPA and a significant impact under CEQA. However, with the proposed Caltrans interchange improvements at this location, the existing at-grade intersection would not exist under future conditions.

Figure 6.11-4
Project Trip Distribution – Harris-DeJager HMF



xx (xx) AM (PM) Peak Hour Volumes

Figure 6.11-5
Existing with Project Volumes – Harris-DeJager HMF

Table 6.11-5
Existing with Project Intersection Operating Conditions around Proposed Harris-DeJager HMF

		AM Peak Hour					PM Peak Hour				
		Existing		Existing plus HST			Existing		Existing plus HST		
	Intersection	LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
1	SR 59/E Sandy Mush Rd[a]	B	12.3	B	12.7	No	B	13.3	B	14.5	No
2	S Bliss Rd/E Sandy Mush Rd[a]	A	8.7	A	9.0	No	A	8.7	A	9.0	No
3	SR 99/Sandy Mush Rd	F	>50	F	>50	Yes	F	>50	F	>50	Yes
4	Hemlock Rd/ SR 152[a]	B	14.4	B	12.8	No	C	15.1	C	15.8	No
5	Road 13/SR 152[a]	B	12.2	B	11.9	No	C	17.6	C	18.1	No

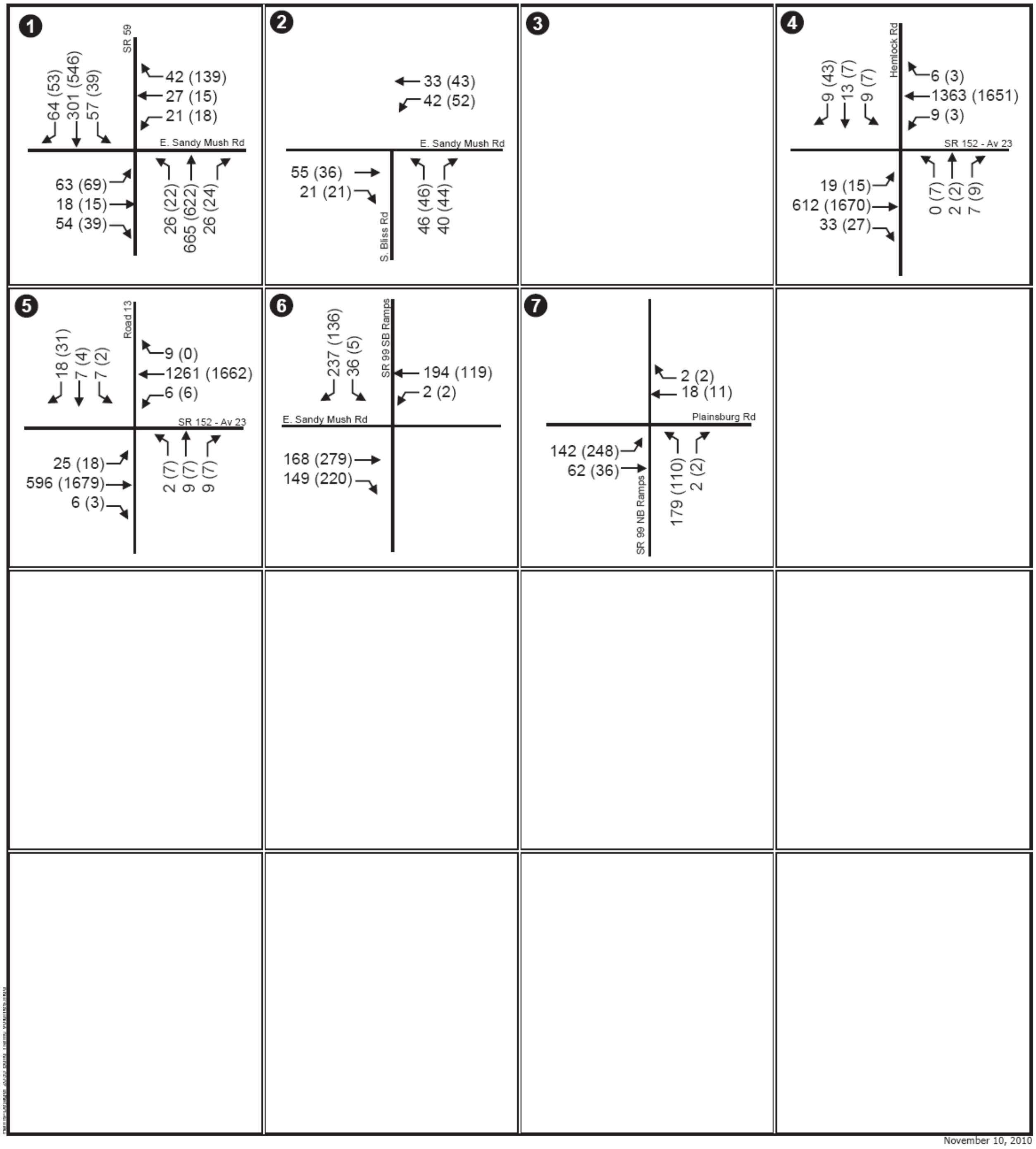
[a] Unsignalized intersection
For two-way stop controlled intersections, LOS and delay are reported for the worst movement.
Impacted intersections are highlighted.

Future Year (2035) Plus Project Conditions

The project volumes for the AM and PM peak hours were added to the future year (2035) No Project volumes to obtain future year (2035) with project volumes, which are presented in Figure 6.11-6. Future year (2035) intersection geometry presented in Figure 5.8-8 was used for future year with project analysis conditions.

Based on the future year geometry and future year with project volumes, intersection analysis was performed for the AM and PM peak hours. The result of the analysis compared against the future year (2035) No Project conditions is presented in Table 6.11-6. LOS calculation sheets are presented in Appendix C. Project traffic impacts at study intersections were identified based on the Authority traffic impact criteria guidelines presented in Section 6.4. Intersections with project impacts are highlighted in Table 6.11-6. As shown in the table, one of the six studied intersections would be affected by project-added traffic, which would result in a substantial impact under NEPA and a significant impact under CEQA.

It can be noted from the table that, although Intersections 4 and 5 operate at LOS F conditions during both the peak hours, these two intersections do not meet the peak hour signal warrant for either of the peak hours; therefore, the project is not considered to have impacts at these two locations.



xx (xx) AM (PM) Peak Hour Volumes

Note: Intersection 3 does not exist under future conditions

Figure 6.11-6
Future Year (2035) with Project Volumes – Harris-DeJager HMF

Table 6.11-6
Future Year (2035) with Project Intersection Operating Conditions - Harris-DeJager HMF

		AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 plus HST			2035 No Project		2035 plus HST		
	Intersection	LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
1	SR 59/E Sandy Mush Road[a]	E	36.8	F	>50	No	F	>50	F	>50	Yes
2	S. Bliss Road/E Sandy Mush Road[a]	A	9.2	A	9.5	No	A	9.1	A	9.5	No
4	Hemlock Road/SR 152[a]	F	>50	F	>50	No	F	>50	F	>50	No
5	Road 13/SR 152[a]	F	>50	E	46.8	No	F	>50	F	>50	No
6	Sandy Mush Road/SR 99 SB Ramps	B	14.1	B	19.7	No	A	6.1	B	13.9	No
7	Plainsburg Road/SR 99 NB Ramps	B	15.4	B	18.9	No	B	17.7	B	16.7	No

[a] Unsignalized intersection
Impacted intersections are highlighted.
For two-way stop controlled intersections, LOS and delay are reported for the worst movement.
Intersection 3 does not exist under future conditions.

6.11.3 Fagundes Heavy Maintenance Facility

6.11.3.1 Fagundes Trip Distribution and Assignment

The trip distribution percentages for the project trips are presented in Figure 6.11-7. Based on the distribution percentages, project volumes were developed for both the AM and PM peak hour conditions.

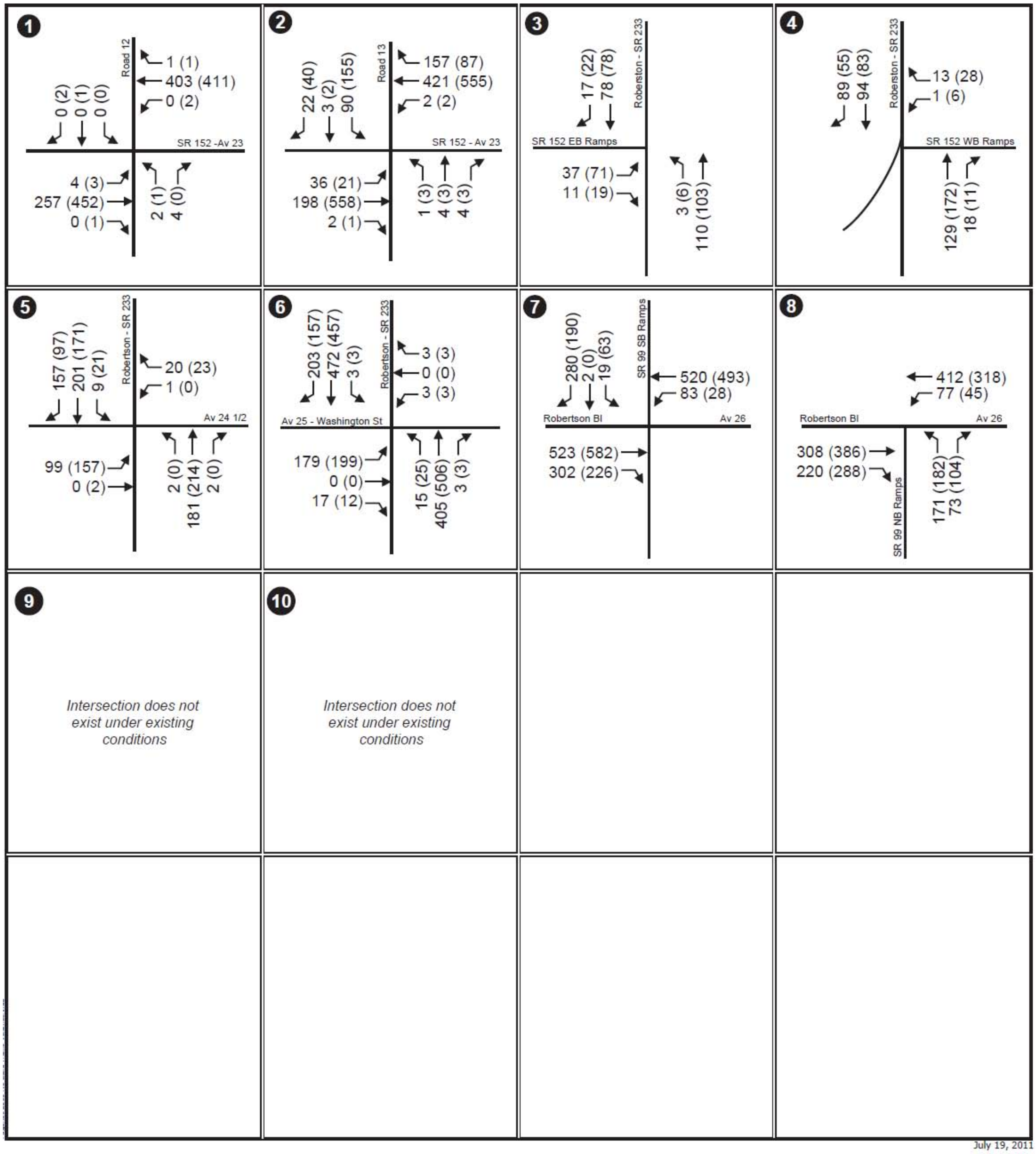
6.11.3.2 Fagundes Intersection Impacts

Existing Plus Project Conditions

The project volumes for the AM and PM peak hours were added to the existing volumes to obtain existing with project volumes, which are presented in Figure 6.11-8.

Based on the existing geometry and existing with project volumes, intersection analysis was performed for the AM and PM peak hours. The result of the analysis compared against existing conditions is presented in Table 6.11-7 and LOS calculation sheets are presented in Appendix C. Project traffic impacts at study intersections were identified based on the Authority traffic impact criteria guidelines presented in Section 6.4. Intersections with project impacts are highlighted in Table 6.11-7. It can be noted from the table that three intersections are affected because of the added project traffic, which would result in a significant impact under CEQA and a substantial impact under NEPA.

Figure 6.11-7
Project Trip Distribution – Fagundes HMF



xx (xx) AM (PM) Peak Hour Volumes

Figure 6.11-8
Existing with Project Volumes – Fagundes HMF

Table 6.11-7
Existing with Project Intersection Operating Conditions – Fagundes HMF

		AM Peak Hour					PM Peak Hour				
		Existing		Existing plus HST			Existing		Existing plus HST		
	Intersection	LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
1	Rd 12/SR 152 – Ave 23[a]	A	9.8	A	10.0	No	B	14.9	C	15.5	No
2	Rd 13/SR 152 – Ave 23[a]	B	12.2	C	19.3	No	C	17.6	F	>50	Yes
3	SR 233/SR 152 EB Ramps[a]	A	9.5	A	9.6	No	A	9.6	A	9.9	No
4	SR 233/SR 152 WB Ramps[a]	A	9.6	A	9.7	No	A	9.7	A	9.9	No
5	SR 233/Ave 24½[a]	B	11.4	B	14.6	No	B	11.7	C	16.3	No
6	SR 233/Ave 25	C	15.4	E	41.8	Yes	C	16.4	F	>50	Yes
7	SR 99 SB Ramps/SR 233 – Ave 26[a]	C	22.4	D	26.5	No	C	20.6	D	27.5	No
8	SR 99 NB Ramps/SR 233 – Ave 26[a]	D	30.1	E	41.4	Yes	D	27.1	E	37.6	Yes

[a] Unsignalized intersection
Impacted intersections are highlighted.
For two-way stop controlled intersections, LOS and delay are reported for the worst movement.

Future Year (2035) Plus Project Conditions

The project volumes for the AM and PM peak hours were added to the future year (2035) No Project volumes to obtain future year (2035) with project volumes, which are presented in Figure 6.11-9. Future year (2035) intersection geometry presented in Figure 5.3-11 was used for future year with project analysis conditions.

Based on the future year geometry and future year with project volumes, intersection analysis was performed for the AM and PM peak hours. The result of the analysis compared against future year (2035) No Project conditions is presented in Table 6.11-8 and LOS calculation sheets are presented in Appendix C. Project traffic impacts at study intersections were identified based on the Authority traffic impact criteria guidelines presented in Section 6.4. Intersections with project impacts are highlighted in Tables 6.11-8. It can be noted from the table that four intersections are affected because of the added project traffic, which would result in a significant impact under CEQA and a substantial impact under NEPA.

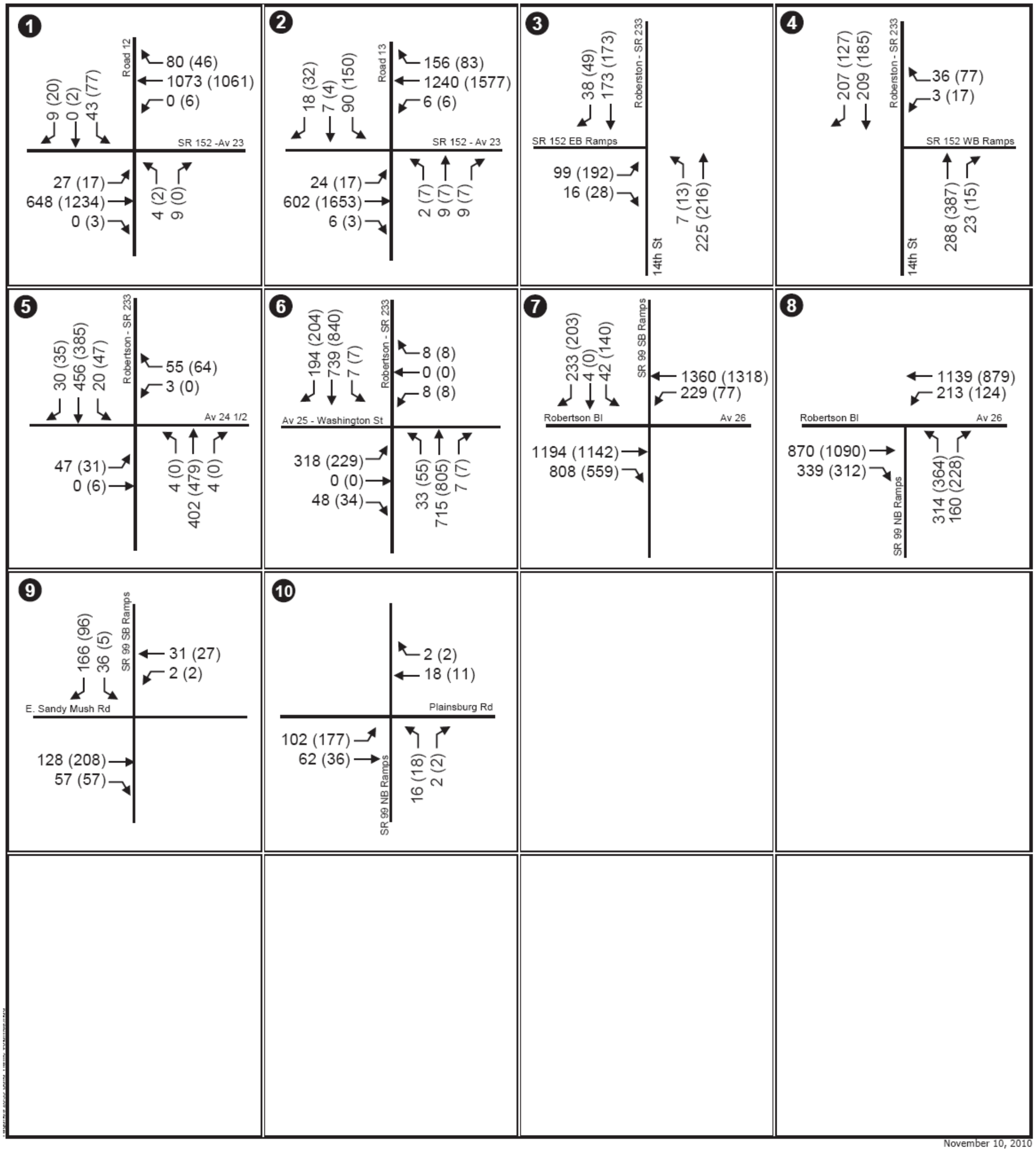
Table 6.11-8
Future Year (2035) with Project Intersection Operating Conditions – Fagundes HMF

		AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 plus HST			2035 No Project		2035 plus HST		
Intersection		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
1	Rd 12/SR 152 – Ave 23[a]	C	15.1	C	15.6	No	F	>50	F	>50	No
2	Rd 13/SR 152 – Ave 23[a]	E	41.9	F	>50	Yes	F	>50	F	>50	Yes
3	SR 233/SR 152 EB Ramps[a]	B	11.4	B	11.4	No	B	12.4	B	12.6	No
4	SR 233/SR 152 WB Ramps[a]	B	11.4	B	11.4	No	B	12.0	B	12.1	No
5	SR 233/Ave 24½[a]	C	20.6	D	27.3	No	C	20.1	D	33.9	No
6	SR 233/Ave 25	F	>50	F	>50	Yes	F	>50	F	>50	Yes
7	SR 99 SB Ramps/SR 233 – Ave 26[a]	F	>50	F	>50	Yes	F	>50	F	>50	Yes
8	SR 99 NB Ramps/SR 233 – Ave 26[a]	F	>50	F	>50	Yes	F	>50	F	>50	Yes
9	SR 99 SB Ramps/Sandy Mush Rd	B	14.1	B	17.7	No	A	6.1	B	14.3	No
10	SR 99 NB Ramps/Sandy Mush Rd	B	15.4	B	10.3	No	B	17.7	A	8.9	No

[a] Unsignalized intersection

Impacted intersections are highlighted.

For two-way stop controlled intersections, LOS and Delay presented for the worst movement.



xx (xx) AM (PM) Peak Hour Volumes

Figure 6.11-9
Future Year (2035) with Project Volumes – Fagundes HMF

6.11.4 Gordon-Shaw Heavy Maintenance Facility

6.11.4.1 Gordon-Shaw Trip Distribution and Assignment

The trip distribution percentages for the project trips are presented in Figure 6.11-10. Based on the distribution percentages, project volumes were developed for both the AM and PM peak hour conditions.

6.11.4.2 Gordon-Shaw Intersection Impacts

Existing Plus Project Conditions

The project volumes for the AM and PM peak hours were added to the existing volumes to obtain existing with project volumes, which are presented in Figure 6.11-11.

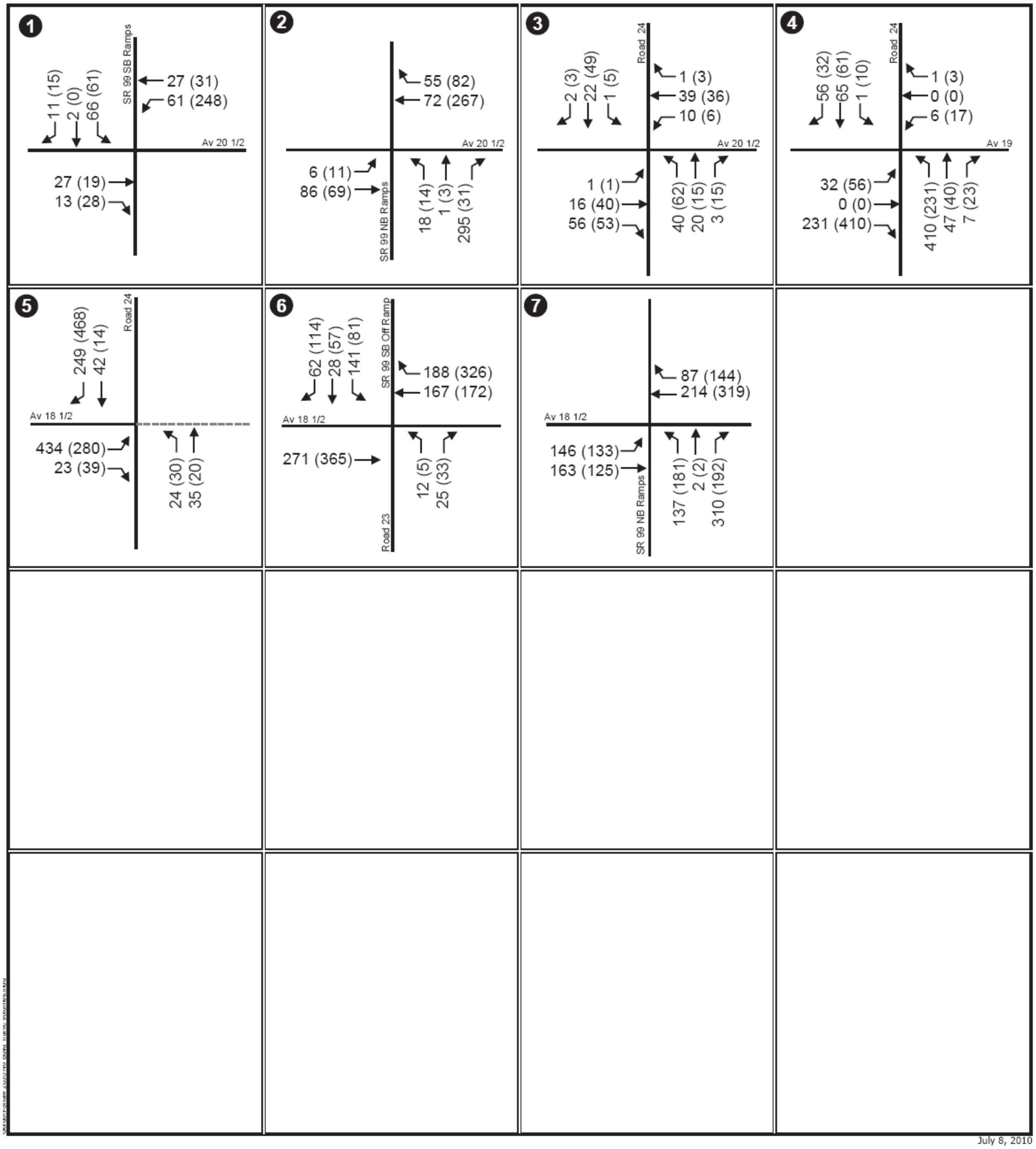
Based on the existing geometry and existing with project volumes, intersection analysis was performed for the AM and PM peak hours. The results of the analysis compared against existing conditions are presented in Table 6.11-9 and LOS calculation sheets are presented in Appendix C. Project traffic impacts at study intersections were identified based on the Authority traffic impact criteria guidelines presented in Section 6.4. Intersections with project impacts are highlighted in Table 6.11-9. It can be noted from the table that one intersection (Intersection 4 – Road 24/Avenue 19) is affected because of the added project traffic, which would result in a significant impact under CEQA and a substantial impact under NEPA.

Table 6.11-9
Existing with Project Intersection Operating Conditions – Gordon-Shaw HMF

		AM Peak Hour					PM Peak Hour				
		Existing		Existing plus HST			Existing		Existing plus HST		
Intersection		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
1	SR 99 SB Ramps/ Ave 20½[a]	A	9.2	A	9.9	No	B	12.2	B	13.7	No
2	SR 99 NB Ramps/ Ave 20½[a]	A	10.0	B	10.5	No	A	9.5	A	9.8	No
3	Road 24/Ave 20½[a]	A	7.2	A	7.3	No	A	7.3	A	7.6	No
4	Road 24/Ave 19[a]	A	9.0	E	35.7	Yes	A	9.2	D	28.6	No
5	Road 24/Ave 18½[a]	A	9.1	C	17.4	No	A	9.3	C	15.1	No
6	SR 99 SB Ramps/ Ave 18½[a]	B	13.4	C	15.5	No	C	16.6	C	16.6	No
7	SR 99 NB Ramps/ Ave 18½[a]	B	12.9	C	25.0	No	B	13.5	D	31.7	No

[a] Unsignalized intersection.
Impacted intersections are highlighted.
For two-way stop controlled intersections, LOS and delay are reported for the worst movement.

Figure 6.11-10
Project Trip Distribution – Gordon-Shaw HMF



xx (xx) AM (PM) Peak Hour Volumes

Figure 6.11-11
Existing with Project Volumes – Gordon-Shaw HMF

Future Year (2035) Plus Project Conditions

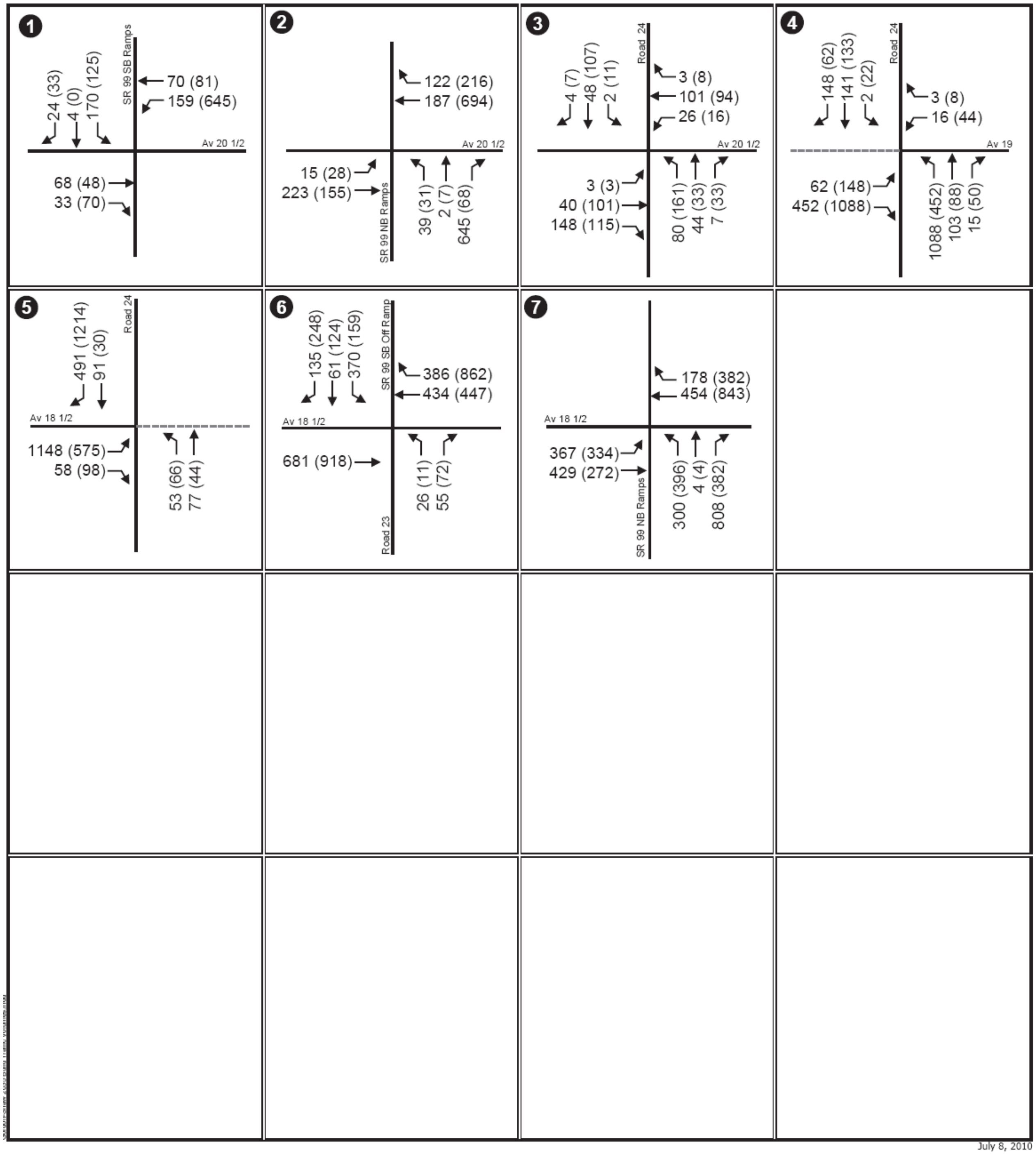
The project volumes for the AM and PM peak hours were added to the future year (2035) No Project volumes to obtain future year (2035) with project volumes, which are presented in Figure 6.11-12. Existing intersection geometry was used for future year with project analysis conditions.

Based on the existing geometry and future year with project volumes, intersection analysis was performed for the AM and PM peak hours. The results of the analysis compared against future year (2035) No Project conditions are presented in Table 6.11-10 and LOS calculation sheets are presented in Appendix C. Project traffic impacts at study intersections were identified based on the Authority traffic impact criteria guidelines presented in Section 6.4. Intersections with project impacts are highlighted in Table 6.11-10. It can be noted from the table that five intersections are affected because of the added project traffic, which would result in a significant impact under CEQA and a substantial impact under NEPA.

Table 6.11-10
Future Year (2035) with Project Intersection Operating Conditions – Gordon-Shaw HMF

		AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 plus HST			2035 No Project		2035 plus HST		
Intersection		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
1	SR 99 SB Ramps/Ave 20½[a]	B	11.0	B	12.8	No	F	>50	F	>50	Yes
2	SR 99 NB Ramps/Ave 20½[a]	C	17.4	C	20.9	No	B	13.2	B	14.0	No
3	Road 24/Ave 20½[a]	A	7.8	A	8.0	No	A	8.3	A	8.7	No
4	Road 24/Ave 19[a]	A	9.8	F	>50	Yes	B	10.3	F	>50	Yes
5	Road 24/Ave 18½[a]	B	10.3	E	39.5	Yes	B	11.2	D	32.9	No
6	SR 99 SB Ramps/Ave 18½[a]	F	>50	F	>50	Yes	F	>50	F	>50	Yes
7	SR 99 NB Ramps/Ave 18½[a]	F	>50	F	>50	Yes	F	>50	F	>50	Yes

Notes:
[a] Unsignalized intersection.
Impacted intersections are highlighted.
For two-way stop controlled intersections, LOS and delay are reported for the worst movement.



xx (xx) AM (PM) Peak Hour Volumes

Figure 6.11-12
Future Year (2035) with Project Volumes – Gordon-Shaw HMF

6.11.5 Kojima Development Heavy Maintenance Facility

6.11.5.1 Kojima Trip Distribution and Assignment

The trip distribution percentages for the project trips are presented in Figure 6.11-13. Based on the distribution percentages, project volumes were developed for both the AM and PM peak hour conditions.

6.11.5.2 Kojima Intersection Impacts

Existing Plus Project Conditions

The project volumes for the AM and PM peak hours were added to the existing volumes to obtain existing with project volume, which are presented in Figure 6.11-14.

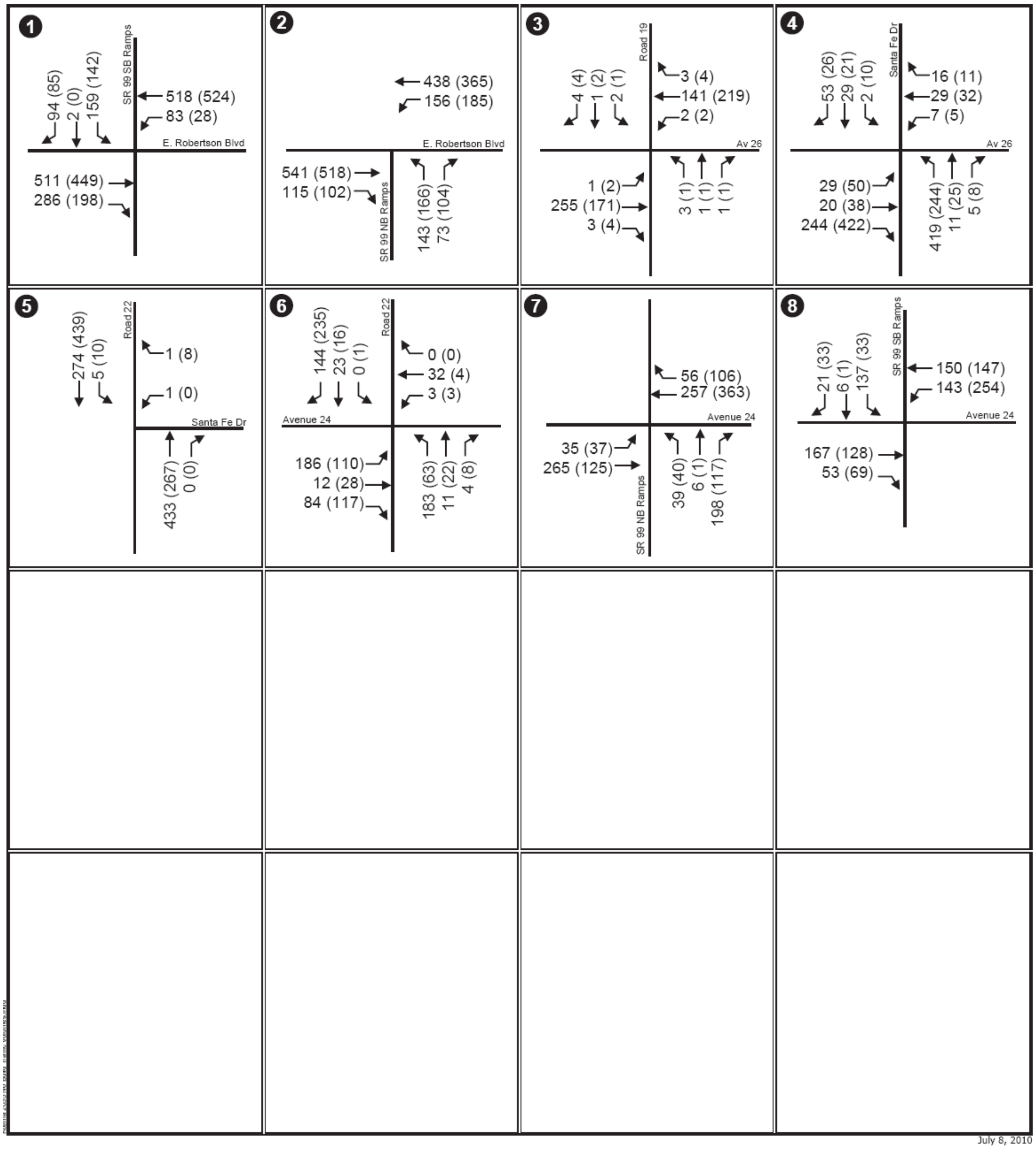
Based on the existing geometry and existing with project volumes, intersection analysis was performed for the AM and PM peak hours. The result of the analysis compared against existing conditions is presented in Table 6.11-11 and LOS calculation sheets are presented in Appendix C. Project traffic impacts at study intersections were identified based on the Authority traffic impact criteria guidelines presented in Section 6.4. Intersections with project impacts are highlighted in Table 6.11-11. It can be noted from the table that two of eight intersections are affected because of the added project traffic, which would result in a significant impact under CEQA and a substantial impact under NEPA.

Table 6.11-11
Existing with Project Intersection Operating Conditions –
Kojima Development HMF

	Intersection	AM Peak Hour					PM Peak Hour				
		Existing		Existing plus HST			Existing		Existing plus HST		
		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
1	SR 99 SB Ramps/ E Robertson Blvd[a]	C	22.4	F	>50	Yes	C	20.6	E	35.2	Yes
2	SR 99 NB Ramps/ E Robertson Blvd[a]	D	30.1	F	>50	Yes	D	27.1	F	>50	Yes
3	Rd 19/Ave 26[a]	A	8.9	B	11.2	No	A	9.0	B	10.8	No
4	Santa Fe Dr/Ave 26[a]	A	9.5	D	25.5	No	A	9.6	C	20.4	No
5	Road 22/Santa Fe Dr [a]	A	8.6	B	12.4	No	A	8.5	A	9.7	No
6	Rd 22/Ave 24[a]	B	10.6	D	28.8	No	A	9.9	C	15.4	No
7	SR 99 NB Ramps/ Ave 24[a]	B	12.6	B	14.2	No	B	11.4	B	13.9	No
8	SR 99 SB Ramps/ Ave 24[a]	B	12.4	C	18.6	No	B	11.0	C	19.1	No

[a] Unsignalized intersection
Impacted intersections are highlighted.
For two-way stop controlled intersections, LOS and delay are reported for the worst movement.

Figure 6.11-13
Project Trip Distribution – Kojima Development HMF



xx (xx) AM (PM) Peak Hour Volumes

Figure 6.11-14
Existing with Project Volumes – Kojima Development HMF

Future Year (2035) Plus Project Conditions

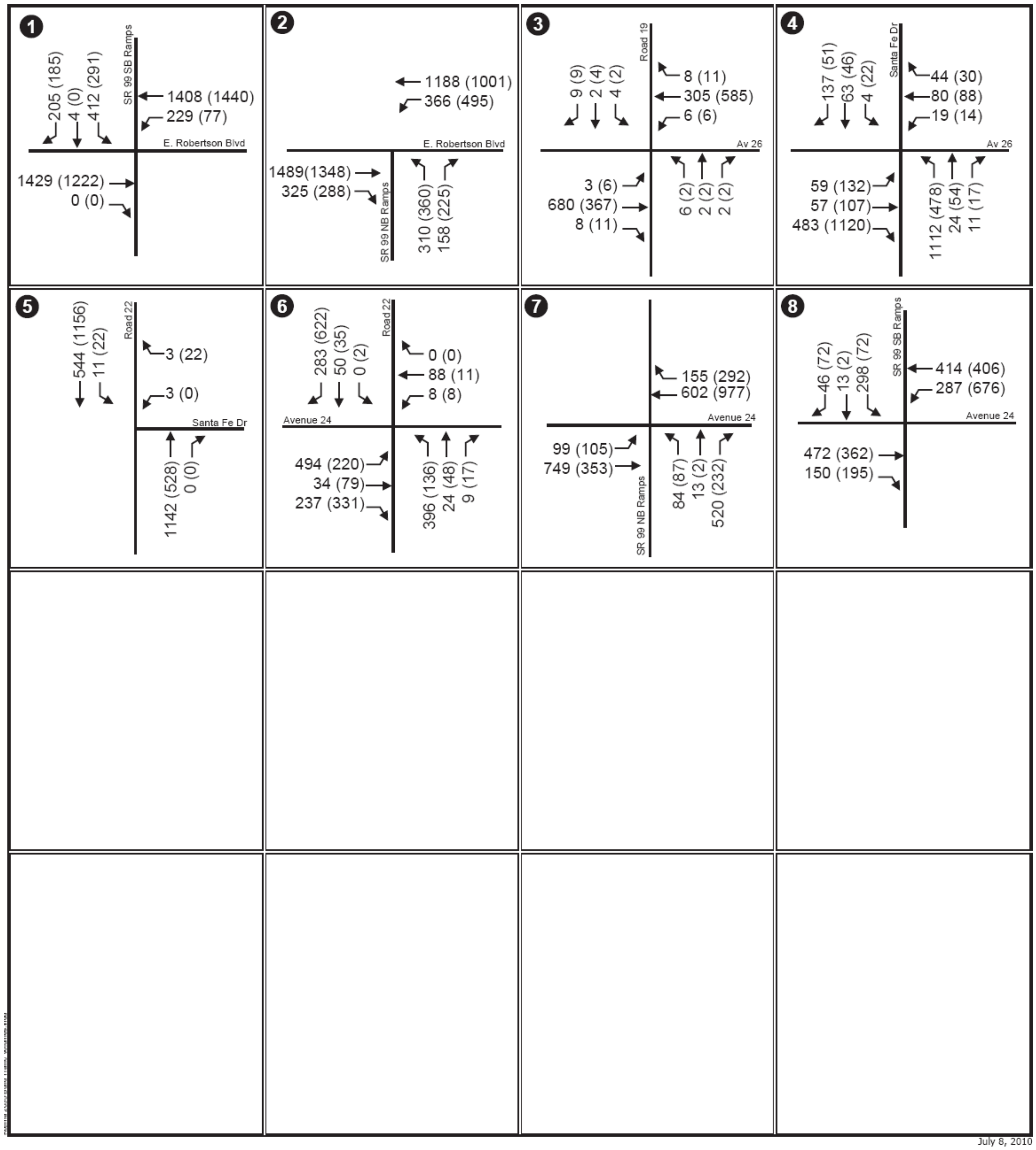
The project volumes for the AM and PM peak hours were added to the future year (2035) No Project volumes to obtain future year (2035) with project volumes, which are presented in Figure 6.11-15. Future year (2035) intersection geometry was used for future year with project analysis conditions.

Based on the future year geometry and future year with project volumes, intersection analysis was performed for the AM and PM peak hours. The result of the analysis compared against future year (2035) No Project conditions is presented in Table 6.11-12 and LOS calculation sheets are presented in Appendix C. Project traffic impacts at study intersections were identified based on the Authority traffic impact criteria guidelines presented in Section 6.4. Intersections with project impacts are highlighted in Table 6.11-12. It can be noted from the table that six of eight intersections are affected because of the added project traffic, which would result in a significant impact under CEQA and a substantial impact under NEPA.

Table 6.11-12
Future Year (2035) with Project Intersection Operating Conditions –
Kojima Development HMF

	Intersection	AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 plus HST			2035 No Project		2035 plus HST		
		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
1	SR 99 SB Ramps/E Robertson Blvd[a]	F	>50	F	>50	Yes	F	>50	F	>50	Yes
2	SR 99 NB Ramps/E Robertson Blvd[a]	F	>50	F	>50	Yes	F	>50	F	>50	Yes
3	Rd 19/Ave 26[a]	A	9.6	B	12.5	No	A	9.8	B	12.1	No
4	Santa Fe Dr/Ave 26[a]	B	10.9	F	>50	Yes	B	11.5	F	>50	Yes
5	Rd 22/Santa Fe Dr [a]	A	8.8	B	13.0	No	A	8.7	A	10.0	No
6	Rd 22/Ave 24[a]	C	24.2	F	>50	Yes	B	13.8	E	36.4	Yes
7	SR 99 NB Ramps/Ave 24[a]	F	>50	F	>50	Yes	D	31.4	F	>50	Yes
8	SR 99 SB Ramps/Ave 24[a]	F	>50	F	>50	Yes	C	23.8	F	>50	Yes

[a] Unsignalized intersection
Impacted intersections are highlighted.
For two-way stop controlled intersections, LOS and delay are reported for the worst movement.



xx (xx) AM (PM) Peak Hour Volumes

Figure 6.11-15
Future Year (2035) with Project Volumes – Kojima Development HMF

6.12 Construction Period Impacts

The project construction is anticipated to be completed within 7 years, including purchasing rights-of-way and testing the HST. Typically, heavy construction (e.g., grading, excavation, constructing structures and the HST railbed, and laying the track) would be accomplished within a 2- to 4-year period. A Construction Management Plan would be prepared that outlines transportation detours, plans to accommodate emergency service routes, and outreach activities to manage expectations and traffic constraints, among other items. This type of plan is a standard practice that would incorporate review and comment by affected local agencies.

Construction period impacts are based on comparison with existing conditions with existing roadway network as a baseline. Since construction impacts are temporary, analysis was not specifically based on the LOS calculations. The common construction impacts on all HST alternatives are impacts on local circulation and emergency access, which are organized by the location which they occur, as follows:

- Urban areas where stations and some mainline construction would occur.
- HMF Alternatives
- Areas adjacent to freeways and/or existing rail lines where existing overcrossings would be modified or relocated, and in some instances, where the freeway would be relocated.
- Rural areas where mainline roadbed and minor road overcrossings would be built.

6.12.1 Urban Area Construction Impacts on Circulation and Emergency Access

In urban areas, project-related construction traffic could contribute to interference with pedestrians, bicyclists, and transit. Also, construction traffic may create an operational hazard or loss of access to community facilities, although emergency access would be maintained. This includes heavy truck traffic, as materials are brought to the project site and demolished or excavated materials are hauled out. Construction activities could require temporary lane or road closures and underground utility work. Construction activities could also lead to both temporary disruption of transportation system operations and possible damage to elements of the roadway system such as pavement and bridges. Most of the HMFs would be located in less urban areas. Because project construction traffic would be temporary, any associated traffic effects would not be considered as impacts.

All truck traffic, either for excavation or for transporting construction materials to the site, would use the designated truck routes within each city. A detailed construction access plan would be developed for the project prior to beginning any construction activities. The construction access plan would be reviewed by the cities.

Trips for construction workers would generally occur outside of the peak hours for freeway and street traffic. The proposed project may involve building remote parking areas for these workers, with shuttles to bring them to and from the construction area if the remote parking areas are distant from the project site. Early construction of the remote parking lots as the first phase of construction would make them available for use by construction workers for the remainder of the project.

The movement of heavy construction equipment such as cranes, bulldozers, and dump trucks to and from the site would generally occur during off-peak hours on designated truck routes. Once onsite, heavy construction equipment would remain there until its use for that job was completed; such equipment would not be moved repeatedly to and from the construction site over public streets.

The construction of the HST stations, platforms, and track alignment would require temporary construction easements (TCEs). The TCE may require the temporary closure of parking areas, roadway travel lanes, pedestrian facilities, bicycle lanes, and paths. Any such closure or removal during construction would be temporary and every attempt would be made to minimize their removal or shorten the length of time that these facilities are inoperable. Upon completion of construction, all parking areas, roadway lanes, pedestrian facilities, and bicycle lanes would be restored.

6.12.1.1 Merced Station Construction Impacts on Circulation

The City of Merced has designated the following roadways in the downtown area of the City as truck routes (City of Merced 2010):

- West 13th Street from G Street to V Street
- West Highway 140 (McSwain Road) from V Street to the westerly city limits
- West 16th Street from the westerly city limits to G Street
- East 16th Street from G Street to Yosemite Parkway
- Yosemite Parkway from East 16th Street to the easterly city limits
- G Street from the northerly city limits to 13th Street
- Martin Luther King, Jr. Way from West 16th Street to Childs Avenue
- V Street from west 16th Street to West Avenue
- Childs Avenue from Highway 59 to the easterly city limits
- West Olive Avenue from Highway 59 to the easterly city limits
- Kibby Road from Yosemite Parkway to Childs Avenue
- Parsons Avenue from Yosemite Parkway to Childs Avenue
- West Avenue from V Street to Childs Avenue
- Highway 59 (Snelling Road) from 16th Street to the northerly city limits
- M Street from West 16th Street to Olive Avenue
- East Childs Avenue from Highway 99 to the easterly city limits

Approximately 225 peak hour trips would be added to the Merced street system during construction of the proposed project in the City of Merced. Construction traffic would use the designated truck routes listed above to access the site. While the actual construction schedule is not known and cannot be known until closer to the beginning of construction, an analysis was conducted to assess impacts. The analysis focused on the impacts of construction-related trips (such as material hauling and worker trips) on City of Merced intersections. Based on this analysis, the addition of construction traffic from the proposed project is projected to be noticeable at the following six intersections:

- 16th Street at SR 59
- 16th Street at V Street
- SR 99 Southbound Ramps at Martin Luther King Jr. Way
- SR 99 Northbound Ramps at Martin Luther King Jr. Way
- 14th Street at Martin Luther King Jr. Way
- SR 99 Southbound On-ramp at SR 140

Depending on the specifics of the construction activities, other intersections could experience increased traffic. However, any delays would be short-term and temporary and so are not considered impacts. Moreover, these impacts would not substantially increase hazards, safety risks, or incompatible uses or result in inadequate emergency access. Because additional trips resulting from construction of the project would be short-term and temporary, and would not substantially increase hazards, safety risks, or incompatible uses, the impacts would be moderate under NEPA and less than significant under CEQA.

6.12.1.2 Fresno Station Construction Impacts on Circulation

The City of Fresno has designated the following roadways in the downtown area of the City as truck routes (City of Fresno 2010b):

- Divisadero Street from H Street to P Street
- P Street from Abbey Street to SR 41
- Abby Street from SR 180 to Divisadero Street

- Blackstone Avenue from SR 180 to Divisadero Street
- East Belmont Avenue (entire length)
- O Street from Ventura Street to Butler Street
- San Benito Street from O Street to Van Ness Avenue
- California Avenue from Martin Luther King to the westerly city limits
- Railroad Avenue from California Avenue to the southerly city limits
- G Street from SR 180 to Golden State Boulevard
- Golden State Boulevard from SR 99 to the southerly city limits
- Ventura Street from Martin Luther King to South 1st Street
- B Street from Toulumne Street to El Dorado Street
- B Street from Ventura Street to East California Street
- A Street from El Dorado Street to Toulumne Street
- Elm Street from California Street to the southerly city limits
- West Amador Street from Whitesbridge Avenue to El Dorado Street
- Whitesbridge Avenue from El Dorado Street to the westerly city limits
- Thorne Avenue from Whitesbridge Avenue to California Avenue
- El Dorado Avenue/Trinity Street from A Street to G Street
- E Street from El Dorado Avenue to Fresno Street
- C Street from Fresno Street to Golden State Boulevard
- Stanislaus Street from B Street to P Street
- Toulumne Street from B Street to P Street
- M Street from Toulumne Street to Los Angeles Street
- Van Ness Avenue from SR 41 to Railroad Avenue

Approximately 170 daily peak-hour trips would be added to the Fresno roadway system during construction of the proposed project. While the actual construction schedule is not currently known and cannot be known until closer to the beginning of construction, an analysis was conducted to assess impacts. The analysis focused on the impacts of construction-related trips (material hauling, worker trips, etc.) on City of Fresno intersections. Based on this analysis, the addition of construction traffic from the proposed project is projected to be noticeable at N Blackstone Avenue at SR 180 westbound ramps.

Depending on the specifics of the construction activities, other intersections could notice increased traffic. These construction impacts are based on a worst-case assessment, however, and would likely be reduced through avoidance and minimization measures, and any impacts are expected to be short-term and temporary. Moreover, these impacts would not substantially increase hazards or incompatible uses or result in inadequate emergency access. Because additional trips resulting from project construction would be short-term and temporary, and would not substantially increase hazards, safety risks, or incompatible uses, the impacts would be moderate under NEPA and less than significant under CEQA.

6.12.2 Heavy Maintenance Facility Alternatives: Construction Impacts on Local Circulation

Impacts on roadways at the HMF during construction would be temporary. Worker vehicles entering and leaving the job sites at the beginning and end of shifts have the potential to increase delays on roadways and at intersections. Use of heavy equipment and delivery or removal of materials by trucks also has the potential to add traffic, especially if it occurs during morning or evening peak periods. However, the HMF sites are generally located on roadways that have relatively low volumes of traffic. Because worker vehicles and heavy equipment accessing job sites would be located on roadways that have relatively low volumes of traffic, impacts associated with HMF construction would be moderate under NEPA and less than significant under CEQA.

6.12.3 Construction Adjacent to Freeways: Construction Impacts on Circulation

Impacts on existing freeways adjacent to the HST mainline would be temporary and would typically affect roadway operations. Such construction could result in temporary closure of traffic lanes, reduction of lane widths, reduced speed limits, temporary on- and off-ramp closures, detours, and temporary closure of the freeway for placement of structural elements of installation or removal of falsework. The duration of these impacts could range from several hours in the case of a freeway closure to months in the case of lane width reductions. Standard construction procedures related to traffic management would be used, including development of a detailed traffic control plan for each affected location prior to beginning any construction activities. These plans would identify when and where temporary closures and detours would occur, with the goal of maintaining traffic flow, especially during peak travel periods. Impacts due to temporary roadway closures associated with construction would not substantially increase hazards or incompatible uses or result in inadequate emergency access. Because standard construction practices would be used to manage traffic during construction, hazards and incompatible uses would not increase, and inadequate emergency access would not occur, the impacts would be moderate under NEPA and less than significant under CEQA.

6.12.4 Construction Related to Realignment of SR 99

The realignment of SR 99 would result in short-term increases in trips associated with construction activity. The number of trips would vary but are expected to be no more than 100 worker trips per day. Most of those trips would occur before the AM and PM peak hours, coinciding with construction worker shifts.

The impacts associated with up to 100 construction worker trips will increase traffic at the intersections of Dakota Avenue/Brawley Avenue and Ashlan Avenue/SR 99 Southbound Ramps. Depending on the specifics of the construction activities, other intersections could be affected. These construction impacts are based on a worst-case assessment, however, and the impacts are expected to be short-term and temporary. Moreover, these impacts would not substantially increase hazards or incompatible uses or result in inadequate emergency access. Because delays from increased traffic caused by construction would be temporary, hazards and incompatible uses would not increase, and inadequate emergency access would not occur, the impacts would be moderate under NEPA and a less than significant impact under CEQA.

Traffic Flow and Circulation Impacts During SR 99 Realignment

Reconstruction of a similar size and scale to the proposed modifications is typically performed in multiple stages. This is done to accommodate the existing traffic flows through the project and provide adequate space for safe and cost effective construction operations. The number of stages needed would be determined by how restrictive the highway corridor is and the amount of traffic being accommodated on alternate routes or through the construction zones. The Conceptual Staging Plans (summarized below) provide more details on the stage construction approach.

Several stages of activities are anticipated for the overall construction effort: utility and local street modifications required to clear the right of way for the relocated highway facility, partial street and structure construction to accommodate staged access of traffic across highway and rail right-of-way, and partial highway construction to accommodate staged traffic through the mainline construction areas. Construction on the SR 99 mainline is anticipated to require a two-stage operation, separate from the utility and local street reconstruction operations:

Stage 1

Construction

- Construction of the north portion of Clinton Avenue and southbound SR 99, including the Clinton Avenue southbound off-ramp.
- Construction of the connection to the existing SR 99 section north of the project area at the Ashlan Avenue interchange, including the Ashlan Avenue southbound on-ramp.
- Construction of the connection to the existing SR 99 section south of the project area at the Clinton Avenue interchange, including the southbound off-ramp to Golden State Boulevard.

Traffic Handling

- Maintaining two lanes in each direction and shifting eastbound and westbound traffic onto the existing south portion of Clinton Avenue; lanes would be maintained while shifting SR 99 southbound traffic at the transition into the project area, and SR 99 northbound traffic would remain in its current condition.

Stage 2

Construction

- Construction of the south portion of Clinton Avenue and northbound SR 99.
- Complete construction of the connection to the existing SR 99 section north of the project area at the Ashlan Avenue interchange and south of the project area at the Clinton Avenue interchange.
- Construction of the Clinton Avenue northbound on-ramps and the Ashlan Avenue northbound off-ramp.

Traffic Handling

- Maintaining two lanes in each direction and shifting eastbound and westbound traffic onto the newly constructed north portion of Clinton Avenue.
- Maintaining lanes and shifting SR 99 northbound traffic at the transition into the project area.
- Maintaining lanes and shifting SR 99 southbound traffic onto newly constructed southbound SR 99.

These construction impacts are based on a worst-case assessment, however, and the impacts are expected to be short-term and temporary. Moreover, these impacts would not substantially increase hazards or incompatible uses or result in inadequate emergency access. Because delays from increased traffic caused by construction would be temporary, hazards and incompatible uses would not increase, and inadequate emergency access would not occur, the impacts would be moderate under NEPA and less than significant under CEQA.

6.12.5 Rural Area Construction: Impacts on Circulation

In rural areas, the primary traffic impacts during construction would occur at locations where overcrossings are needed to carry minor roadways over the tracks. At these locations, the affected roadway would either be rerouted onto a temporary alignment or temporarily closed. Temporary closures would be viable if traffic volumes on the affected roadway were very low and a detour route was available that did not require an extraordinary amount of additional travel. Because local traffic would be rerouted during construction, these impacts would be negligible under NEPA and less than significant under CEQA.

7.0 Mitigation Measures

This section presents the mitigation measures identified to bring the project impacts to a less than significant level. The section begins with program-level mitigation strategies, followed by project-level mitigation measures for the HST stations and the HMFs.

7.1 Program Mitigation Measures

The project has considered avoidance and minimization measures consistent with those described in the Statewide and Bay Area to Central Valley Program EIRs and EISs (Authority and FRA 2005 and 2008, Authority 2010). The optional project-specific mitigation measures below are available to compensate for impacts that cannot be minimized or avoided.

None of these mitigation measures would create secondary significant impacts to the project footprint. In addition, the various cities and/or counties may implement some of these mitigation measures prior to the construction of the HST system because of planned development adjacent to affected intersections or roadways. Mitigation measures not in place prior to development of the HST construction plans would be included in the project plans. Possible exceptions may be intersections proposed for signalization but not warranted at the time of construction, as discussed further below.

The following potential regional mitigation strategies were identified in the programmatic documents (Authority and FRA 2005 and 2008):

- Coordinate with regional transportation (highway and transit) planning (e.g., regional transportation plans, congestion management plans, freeway deficiency plans, etc.).
- Use ITS Strategies.

Potential local mitigation strategies identified in the programmatic documents include the following:

- Provide additional parking.
- Consider offsite parking with shuttles.
- Explore shared parking strategies.
- Implement parking permit plans for neighborhoods.
- Employ parking and curbside use restrictions.
- Develop and implement a construction phasing and traffic management plan.
- Widen roadways.
- Install new traffic signals.
- Improve capacity of local streets with upgrades in geometrics, such as providing standard roadway lane widths, traffic controls, bicycle lanes, shoulders, and sidewalks.
- Install modifications at intersections, such as signalization and/or capacity improvements (widening for additional left-turn and/or through lanes).
- Coordinate and optimize signals (including retiming and rephrasing).
- Designate one-way street patterns near some station locations.
- Implement turn prohibitions.

- Use one-way streets and traffic diversion to alternate routes.
- Work with public transportation providers to coordinate services and to increase service and/or add routes, as necessary, to serve the HST station areas.
- Minimize closure of any proximate freight or passenger rail line or highway facility during construction.

The above mitigation strategies would be refined and applied at the project level. They are expected to substantially avoid or lessen impacts around station areas to a less than significant level in most circumstances by planning for multimodal stations, coordinating with transit services, providing accessible locations and street improvements, and encouraging transit-oriented development in the station areas, all of which would help to ease traffic constraints near the stations. While it is expected that most impacts would be mitigated to a less than-significant level, it is possible that some stations impacts would not be mitigated to the less than significant level. Sufficient information is not available at this programmatic level to conclude with certainty that the above mitigation strategies would reduce impacts around stations to a less than significant level in all circumstances. This document therefore concludes that traffic impacts around station areas may be significant, even with the application of mitigation strategies. Additional environmental assessment would allow a more precise evaluation in the second-tier, project-level environmental analyses. The co-lead agencies will work closely with local government agencies at the project level to implement mitigation strategies.

The Authority and FRA have considered avoidance and minimization measures consistent with the Statewide and Bay Area to Central Valley Program EIR/EIS commitments. During project design and construction, the Authority and FRA would implement measures to reduce impacts on transportation. These measures are considered to be part of the project and are described in the following text.

1) **Off-Street Parking for Construction-Related Vehicles**. Identify adequate off-street parking for all construction-related vehicles throughout the construction period. If adequate parking cannot be provided on the construction sites, designate a remote parking area and use a shuttle bus to transfer construction workers to the job site.

2) **Maintenance of Pedestrian Access**. Prepare specific construction management plans to address maintenance of pedestrian access during the construction period. Pedestrian access-limiting actions would include, but not be limited to, sidewalk closures, bridge closures, crosswalk closures or pedestrian rerouting at intersections, placement of construction-related material within pedestrian pathways or sidewalks, and other actions that may affect the mobility or safety of pedestrians during the construction period. If sidewalks are maintained along the construction site frontage, provide covered walkways. Pedestrian access would be maintained where feasible.

3) **Maintenance of Bicycle Access**. Prepare specific construction management plans to address maintenance of bicycle access during the construction period. Bicycle access-limiting actions would include, but not be limited to, bike lane closures or narrowing, closure or narrowing of streets that are designated bike routes, bridge closures, placement of construction-related materials within designated bike lanes or along bike routes, and other actions that may affect the mobility or safety of bicyclists during the construction period. Bicycle access would be maintained where feasible.

4) **Restriction on Construction Hours**. Limit construction material deliveries between 7 a.m. and 9 a.m. and between 4 p.m. and 6 p.m. on weekdays. The number of construction employees arriving or departing the site between the hours of 4:30 p.m. and 6 p.m. would be limited.

5) **Construction Truck Routes**. Deliver all construction-related equipment and materials on the appropriate truck routes. Prohibit heavy construction vehicles from accessing the site via other routes.

6) **Protection of Public Roadways during Construction**. Repair any structural damage to public roadways, returning any damaged sections to their original structural condition. Survey the condition of the public roadways along truck routes providing access to the proposed project site both before

construction and after construction is complete. Complete a before-and-after survey report and submit to the Authority for review, indicating the location and extent of any damage.

7) **Maintenance of Public Transit Access and Routes**. Coordinate with the appropriate transit jurisdiction before limiting access to public transit and limiting movement of public transit vehicles. Potential actions that would impact access to transit include, but are not limited to, relocating or removing bus stops, limiting access to bus stops or transfer facilities, or otherwise restricting or constraining public transit operations. Public transit access and routing would be maintained where feasible.

8) **Construction Transportation Plan**. Prepare a detailed construction transportation plan prior to commencing any construction activities, to address in detail the activities to be carried out in each construction phase. Such activities include, but are not limited to, the routing and scheduling of materials deliveries, construction employee arrival and departure schedules, employee parking locations, and emergency vehicle access. The Plan would include a traffic control plan that addresses temporary road closures, detour provisions, allowable routes, and alternative access.

9) **Construction during Special Events.** Provide a mechanism to prevent roadway construction activities from reducing roadway capacity during major athletic events or other special events that attract a substantial number of visitors. Mechanisms to maintain roadway capacity include police officers directing traffic, special event parking, and use of traffic cones and within-the-curb parking or shoulder lanes for through traffic.

The mitigation measures below are intended to compensate for impacts that cannot be minimized or avoided. None of these mitigation measures would create secondary significant impacts. In addition, the various cities and/or counties may implement some of these mitigation measures prior to the construction of the HST system because of planned development adjacent to affected intersections or roadways. Mitigation measures not in place prior to development of the HST construction plans would be included in the project plans. Possible exceptions may be intersections proposed for signalization but not warranted at the time of construction, as discussed further below.

The following mitigation measures are designed to reduce significant transportation system impacts to intersections and roadways to less-than-significant levels.

7.2 Roadway Operations along Alternative Alignments

7.2.1 Mitigation Measure for Potential Road Closures

TR MM#1: Access Maintenance for Property Owners. Maintain access for owners to property within the construction area. If a proposed road closure restricts current access to a property, provide alternative access via connections to existing roadways. If adjacent road access is not available, prepare new road connections, if feasible. If alternative road access is not feasible, the property would be considered for acquisition.

7.2.2 Mitigation Measures for SR 99 Realignment Freeway Impacts

TR MM#2: Add Southbound Auxiliary Lane to SR 99. Add southbound auxiliary lane south of Clinton Avenue on-ramp to Olive Avenue.

7.3 Mitigation Measures for HST Intersections and Roadway Impacts

TR MM#3: Modify Signal Phasing. Modify traffic signal phasing sequence to improve operations at a signalized intersection.

TR MM#4: Add Signal to Intersection to Improve LOS/Operation. Add traffic signals to affected unsignalized intersections in order to improve LOS and intersection operation. Intersections proposed for signalization must meet traffic signal warrants in order to be considered as impacted. This condition occurs in 2035 for the identified intersections, but the warrant criteria may not be met at earlier dates, such as the completion of construction. Therefore, the signalization mitigation would only be required at such time as the warrant is met. The mitigation summary indicates any locations where this mitigation would be justified after 2020. These intersections would have to be monitored once a year to determine if/when the warrant is met. Unless otherwise noted in the mitigation summary, this mitigation is justified before 2020.

TR MM#5: Restripe Intersections. Restripe specific intersections surrounding proposed HST station locations in order to improve LOS and intersection operations.

TR MM#6: Modify Signal Timing. Modify signal timing (to optimize cycle length and/or splits) at specific intersections surrounding proposed HST station locations in order to improve LOS and intersection operations.

TR MM#7: Widen Approaches to Intersections. Widen approaches in order to improve LOS and intersection operation.

TR MM#8: Add Exclusive Turn Lanes to Intersections. Add exclusive turn lanes at specific intersections in order to improve LOS and intersection operations.

TR MM#9: Convert Two-Way Stop to Four-Way Stop. Convert two-way stop controlled intersection to an all-way stop controlled intersection.

TR MM #10: Grade Separate Through Movements. Modify the intersection to provide an overpass for through movements to improve LOS and intersection operations.

TR MM#11: Add Lanes to the Segment. Add travel lanes to the roadway segment in order to increase capacity and improve roadway operations.

7.3.1 Fresno Area Between Herndon and Shaw Avenues Mitigation Measures

7.3.1.1 Existing with Project Conditions

Table 7.3-1 presents the specific mitigation measures recommended for impacted locations in Fresno because of the Carnegie Avenue closure and the new overpass at Shaw Avenue under existing plus project conditions. These mitigations are applicable to all project alternatives.

Table 7.3-1
Existing with Project Intersection Mitigation Measures – Fresno Area between Herndon and Shaw Avenues

Intersection/Location Affected	Mitigation Measure(s)	Specific Actions Recommended
3 - Cornelia Ave / Shaw Ave	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection.
9 - Figarden Dr / Bullard Ave	**TR MM#6:** Modify Signal Cycle Timing.	Optimize signal timing and splits.

Applying the mitigation measures identified in the table above, intersection analysis was performed and the results of the analysis are presented in comparison to the No Project conditions in Table 7.3-2. LOS calculation sheets are presented in Appendix C.

It can be noted from Table 7.3-2 that the mitigation measures reduce the project impacts to a less than significant level per the significance criteria guidelines described in Section 3 of this report. With the mitigation measures, no intersection with an LOS of D or better would be degraded to LOS E or F.

Table 7.3-2
Existing Mitigated Intersection Operating Conditions – Fresno Area between Herndon and Shaw Avenues

		AM Peak Hour					PM Peak Hour				
		Existing		Existing HST + Mitigations			Existing		Existing HST + Mitigations		
Intersection		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
3	Cornelia Ave / Shaw Ave	E	36.4	B	14.6	No	E	44.9	D	46.5	No
9	Figarden Dr / Bullard Ave	D	45.6	D	52.3	No	D	43.0	D	43.6	No

As no roadway segments will be impacted by the project, no mitigation measure is proposed.

7.3.1.2 Future Year (2035) With Project Conditions

Table 7.3-3 presents the specific mitigation measures recommended at impacted intersections in Fresno because of the Carnegie Avenue closure and the new overpass at Shaw Avenue. These mitigations are applicable to all project alternatives.

Table 7.3-3
Future Year (2035) with Project Intersection Mitigation Measures –
Fresno Area between Herndon and Shaw Avenues

Intersection/Location Affected	Mitigation Measure(s)	Specific Actions Recommended
1 – Golden State Blvd/Santa Ana Ave	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Signalize the intersection. (meets signal warrant in 2035) Widen northbound approach to provide dual left-turn lanes and one through lane.
2 – Cornelia Ave/Santa Ana Ave	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize the intersection. (meets signal warrant in 2035)
3 – Cornelia Ave/Shaw Ave	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Signalize the intersection. Widen westbound approach to provide additional left-turn lane and one through lane. Widen northbound approach to provide two right-turn lanes and one shared through-left-turn lane.
5 – Blythe Ave/Shaw Ave	**TR MM#6:** Modify Signal Timing.	Modify signal timing.

Intersection/Location Affected	Mitigation Measure(s)	Specific Actions Recommended
7 – Cornelia Ave/Golden State Blvd	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize the intersection (meets signal warrant in 2035).
9 – Figarden Dr/Bullard Ave	**TR MM#5:** Restripe Intersections; **TR MM#6:** Modify Signal Timing.	Restripe eastbound through movement to shared through-right turn movement. Modify signal timing
14 – Veterans Blvd/Bullard Ave	**TR MM#5:** Restripe Intersections; **TR MM#6:** Modify Signal Timing; **TR MM#10:** Grade separate through movements.	Grade-separated through movement on Veterans Boulevard. Restripe eastbound approach to provide one left turn lane and two right turn lanes. Restripe northbound approach to provide three left turn lanes and one through lane. Modify signal timing.
15 – Veterans Blvd/Golden State Blvd Connector	**TR MM#3:** Modify Signal Phasing: **TR MM#5:** Restripe Intersections.	Restripe eastbound approach to provide one left turn lane and four through lanes. Widen westbound approach to provide additional left turn lane and a through lane. Modify northbound and southbound right turn as free movements.

Applying the mitigation measures identified in the table above, intersection analysis was performed and the results of the analysis are presented in comparison to the No Project conditions in Table 7.3-4. LOS calculation sheets are presented in Appendix C.

It can be noted from Table 7.3-4 that the mitigation measures reduce the project impacts to a less than significant level per the significance criteria guidelines described in Section 3 of this report. With the mitigation measures, no intersection with an LOS of D or better would be degraded to LOS E or F. Also, for those intersections that would operate at LOS E or F with mitigations, the increase in delay would not be more than 4 seconds for signalized intersections and 5 seconds for unsignalized intersections. Hence, the project impact is reduced to a less than significant level. Actual delay values for LOS F conditions are provided in the LOS calculation sheets included in Appendix C.

Table 7.3-4
Future Year (2035) Mitigated Intersection Operating Conditions –
Fresno Area between Herndon and Shaw Avenues

	Intersection	AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 HST + Mitigations			2035 No Project		2035 HST + Mitigations		
		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
1	Golden State Blvd/Santa Ana Ave	E	48.2	B	13.8	No	F	>50	D	45.5	No
2	Cornelia Ave/Santa Ana Ave	A	7.2	B	13.2	No	A	6.8	D	52.9	No
3	Cornelia Ave/Shaw Ave	F	>80	C	20.4	No	F	>80	C	29.4	No
5	Blythe Ave/Shaw Ave	E	55.2	E	57.2	No	F	>80	F	>80	No
7	Cornelia Ave/Golden State Blvd	E	40.6	A	6.8	No	F	>50	A	7.1	No
9	Figarden Dr/Bullard Ave	F	>80	E	64.7	No	F	>80	F	>80	No
14	Veterans Blvd/Bullard Ave	E	74.1	E	69.9	No	E	72.4	E	58.2	No
15	Veterans Blvd/Golden State Blvd Connector	C	27.3	D	35.8	No	E	80.0	F	>80	No

Table 7.3-5 presents the specific mitigation measure recommended for impacted roadway segments because of the Carnegie Avenue closure and the new overpass at Shaw Avenue. These mitigations are applicable to all project alternatives.

Table 7.3-5
Future Year (2035) with Project Roadway Mitigation Measures –
Fresno Area between Herndon and Shaw Avenues

Intersection/Location Affected	Mitigation Measure(s)	Specific Actions Recommended
5 – Veterans Blvd between Golden State Blvd and Bullard Ave	**TR MM#11:** Add Lanes to the Segment.	Add one lane in each direction.

7.3.2 SR 99 Realignment Intersection Mitigation Measures

7.3.2.1 Existing With Project Conditions

Table 7.3-6 presents the mitigation measures recommended at impacted intersections because of the SR 99 realignment under existing with project conditions. These impacts are applicable to all project alternatives.

Table 7.3-6
Existing with Project Intersection Mitigation Measures – Proposed SR 99 Realignment

Intersection/Location Affected	Mitigation Measure(s)	Specific Actions Recommended
10 - Clinton Ave / Weber Ave	**TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Widen southbound approach to provide second left-turn lane. Widen eastbound approach to provide second left-turn lane.
15 - Dakota Ave / Brawley Ave	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation; **TR MM#5:** Restripe Intersections; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Signalize. Restripe northbound approach to include exclusive left-turn lane and shared through-right-turn lane. Widen southbound approach to include exclusive left-turn, through and exclusive right-turn lanes.

Applying the mitigation measures identified in the table above, intersection analysis was performed and the results of the analysis are presented in comparison to the No Project conditions in Table 7.3-7. LOS calculation sheets are presented in Appendix C.

It can be noted from Table 7.3-7 that the mitigation measures reduce the project impacts to a less than significant level per the significance criteria guidelines described in Section 3 of this report. With the mitigation measures, no intersection with an LOS of D or better would be degraded to LOS E or F.

Table 7.3-7
Existing Mitigated Intersection Operating Conditions – Fresno Area between Herndon and Shaw Avenues

		AM Peak Hour					PM Peak Hour				
		Existing		Existing HST + Mitigations			Existing		Existing HST + Mitigations		
Intersection		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
10	Clinton Ave / Weber Ave	D	36	C	27	No	E	64	C	32	No
15	Dakota Ave / Brawley Ave	B	14	A	7	No	C	16	A	7	No

7.3.2.2 Future Year (2035) With Project Conditions

Table 7.3-8 presents the mitigation measures recommended at impacted intersections because of the SR 99 realignment under future year (2035) with project conditions. These impacts are applicable to all project alternatives.

Table 7.3-8
Future Year (2035) with Project Mitigation Measures – Proposed SR 99 Realignment

Intersection/Location Affected	Mitigation Measure(s)	Specific Actions Recommended
5 - Clinton Ave / Brawley Ave	**TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Widen southbound approach to provide second left-turn lane
6 - Clinton Ave / Marks Ave	**TR MM#5:** Restripe Intersections; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Widen northbound approach to provide exclusive northbound right-turn lane Restripe southbound approach to include two left-turn lanes and one shared through-right-turn lane
8 - Clinton Ave / SR 99 SB Ramps	**TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Widen eastbound approach to provide exclusive eastbound right-turn lane
10 - Clinton Ave / Weber Ave	**TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Widen southbound approach to provide second left-turn lane Add eastbound approach to provide second left-turn lane
14 - Shields Ave / Brawley Ave	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize
15 - Dakota Ave / Brawley Ave	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation; **TR MM#5:** Restripe Intersections; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Signalize Restripe northbound approach to include exclusive left-turn lane and shared through-right-turn lane Restripe westbound approach to include exclusive left-turn lane and shared through-right-turn lane Widen southbound approach to include exclusive left-turn, through and exclusive right-turn lanes Widen eastbound approach to include exclusive left-turn and shared through-right-turn lane
16 - Ashlan Ave – SR 99 SB Ramps / Parkway Dr	**TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Add second northbound right-turn lane

Intersection analysis was performed applying the mitigation measures identified in the table above, and the results of the analysis are presented in Table 7.3-9 in comparison to the future year (2035) No Project conditions. LOS calculation sheets are presented in Appendix C.

It can be noted from the Table 7.3-9 that the mitigation measures reduce the project impacts to a less than significant level per the significance criteria guidelines described in Section 3 of this report. With the mitigation measures, no intersection with an LOS of D or better would be degraded to LOS E or F. For those intersections that would operate at LOS E or F with mitigation, the increase in delay would not be more than 4 seconds for signalized intersections and 5 seconds for unsignalized intersections. Hence, the project impact is reduced to a less than significant level. Actual delay values for LOS F conditions are provided in the LOS calculation sheets included in Appendix C.

Table 7.3-9
Future Year (2035) Mitigated Intersection Operating Conditions – Proposed SR 99 Realignment

		AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 HST + Mitigations			2035 No Project		2035 HST + Mitigations		
Intersection		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
5	Clinton Ave / Brawley Ave	C	26	C	29	No	D	42	D	44	No
6	Clinton Ave / Marks Ave	F	>80	F	>80	No	F	>80	F	>80	No
8	Clinton Ave / SR 99 SB Ramps	C	28	D	49	No	C	23	B	19	No
10	Clinton Ave / Weber Ave	A	9	F	>80	No	A	9	D	41	No
14	Shields Ave / Brawley Ave	F	>50	A	10	No	F	>50	B	18	No
15	Dakota Ave / Brawley Ave	F	>80	C	25	No	F	>80	D	43	No
16	Ashlan Ave – SR 99 SB Ramps / Parkway Dr	F	>50	F	>80	No	F	>50	F	>50	No

7.3.3 Merced Station

7.3.3.1 Existing With Project Conditions

Table 7.3-10 presents the mitigation measures recommended at impacted intersections surrounding the Downtown Merced Station. These station impacts are applicable to all project alternatives.

Table 7.3-10
Existing with Project Mitigation Measures – Downtown Merced Station (Parking Option A)

Intersection/Location Affected	Mitigation Measure(s)	Specific Actions Recommended
1 - 16th St/ SR 59	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection.
14 – 15th St / M St	**TR MM#7:** Widen Approaches to Intersections.	Widen eastbound and westbound approaches to provide one left-through lane and one right-through lane.

Intersection/Location Affected	Mitigation Measure(s)	Specific Actions Recommended
22 – 14th St / Martin Luther King Jr. Way	**TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Widen southbound approach to provide left-turn lane.
25 – 13th St / G St	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection.
31 - SR 99 NB Off-ramp/ SR 140	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection.
39 – 16th St / Canal St	**TR MM#5:** Restripe Intersection.	Restripe eastbound approach from one shared-through left lane and one exclusive right-turn lane to one exclusive left-turn lane and a shared through-right lane.
44 – Main St / H St	**TR MM#9:** Convert Two-Way Stop to Four-Way Stop.	Convert two-way stop controlled intersection to an all-way stop controlled intersection.

Applying the mitigation measures identified in the table above, intersection analysis was performed and the results of the analysis are presented in comparison to the existing conditions in Table 7.3-11. LOS calculation sheets are presented in Appendix C.

It can be noted from Table 7.3-11 that the mitigation measures reduce the project impacts to a less than significant level per the significance criteria guidelines described in Section 3 of this report. With the mitigation measures, no intersection with an LOS of D or better would be degraded to LOS E or F. Also, those intersections that would operate at LOS E or F with mitigation, the increase in delay would not be more than 4 seconds for signalized intersections and 5 seconds for unsignalized intersections. Hence, the project impact is reduced to a less than significant level. Actual delay values for LOS F conditions are provided in the LOS calculation sheets included in Appendix C.

Table 7.3-11
Existing Mitigated Intersection Operating Conditions – Downtown Merced Station (Parking Option A)

Intersection		AM Peak Hour					PM Peak Hour				
		Existing		Existing HST + Mitigations			Existing		Existing HST + Mitigations		
		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
1	16th St/ SR 59	C	16.3	C	17.0	No	F	>50	C	23.8	No
14	15th St / M St	B	11	B	14.1	No	B	12.7	C	22.7	No
22	14th St / Martin Luther King Jr. Way	C	16.6	C	22.1	No	C	21.8	D	33.5	No
25	13th St / G St	B	12.9	B	12.4	No	C	15.4	B	14.7	No
31	SR 99 NB Off-ramp/ SR 140	F	>50	F	>50	No	F	>50	C	31.3	No
39	16th St / Canal St	C	22.2	D	32.7	No	E	36.7	F	>50	No
44	Main St / H St	A	10	C	21.1	No	B	10.9	C	15.8	No

For impacted intersections under Parking Option B (Intersections 1, 22, 25, 31, 39 and 44), mitigation measures identified for Parking Option A, presented in Table 7.3-10, would be applicable. Applying these mitigation measures, analysis was performed for the impacted intersections and the results of the same are presented in Table 7.3-12. LOS calculation sheets are presented in Appendix C.

It can be noted from the table that the mitigation measures reduce the project impacts to a less than significant level per the significance criteria guidelines described in Section 3 of this report. With the mitigation measures, no intersection with an LOS of D or better would be degraded to LOS E or F. For those intersections that would operate at LOS E or F with mitigation, the increase in delay would not be more than 4 seconds for signalized intersections and 5 seconds for unsignalized intersections. Hence, the project impact is reduced to a less than significant level. Actual delay values for LOS F conditions are provided in the LOS calculation sheets included in Appendix C.

Table 7.3-12
Existing Mitigated Intersection Operating Conditions – Downtown Merced Station (Parking Option B)

Intersection		AM Peak Hour					PM Peak Hour				
		Existing		Existing HST + Mitigations			Existing		Existing HST + Mitigations		
		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
1	16th Street/SR 59	C	16.3	C	17.0	No	F	>50	C	23.8	No
22	14th St / Martin Luther King Jr. Way	C	16.6	C	18.6	No	C	21.8	D	33.7	No
25	13th St / G St	B	12.9	C	12.6	No	C	15.4	C	14.9	No
31	SR 99 NB Off-ramp/ SR 140	F	>50	F	>50	No	F	>50	C	31.9	No
39	16th St / Canal St	C	22.2	D	32.3	No	E	36.7	F	>50	No
44	Main St / H St	A	10	C	21.3	No	B	10.9	D	15.7	No

In addition to the intersection mitigations, the mitigation measure for roadway impacts (TR MM#11, Add Lanes to the Segment, which would add capacity by widening the impacted roadway by one lane per direction) would be required on M Street between 13th and 16th Streets under Parking Options A and B and on V Street west of 13th Street under Parking Option B only.

7.3.3.2 Future Year (2035) With Project Conditions

Table 7.3-13 presents the mitigation measures recommended at impacted intersections surrounding the Downtown Merced Station. These station impacts are applicable to all project alternatives.

Table 7.3-13
Future Year (2035) with Project Mitigation Measures – Downtown Merced Station (Parking Option A)

Intersection		Mitigation Measure(s)	Specific Action Recommended
1	16th St/SR 59	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Signalize intersection. Widen northbound approach to add second right-turn lane. Widen westbound approach to add second left-turn lane. Modify signal phasing to "overlap" northbound right turn movement with westbound left turn movement and westbound right turn with southbound left turn movement.
3	13th St - SR 99 SB Off-ramp/V St	**TR MM#5:** Restripe Intersections; **TR MM#6:** Optimize Signal Cycle Length; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Restripe the southbound approach (SR 140) from left-turn, through, shared through-right-turn lane to left-turn, shared through-left-turn, and shared through-right-turn lane. Widen SR 99 SB off-ramp to add exclusive right turn lane.
6	16th St/V St	**TR MM#6:** Optimize Signal Cycle Length.	Modify signal timing.
14	15th St/M St	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection (meets signal warrant between 2020 and 2025).
18	Childs Ave/Martin Luther King Jr. Way	**TR MM#7:** Widen Approaches to Intersections; **TR MM#8** Add Exclusive Turn Lanes to Intersections.	Widen southbound approach on Childs Avenue to provide exclusive right-turn lane.
20	SR 99 SB Ramps/Martin Luther King Jr. Way	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection.
21	SR 99 NB Ramps/Martin Luther King Jr. Way	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection.
22	14th St/Martin Luther King Jr. Way	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection.
24	16th St/Martin Luther King Jr. Way	**TR MM#3:** Modify Signal Phasing.	Change northbound/southbound split phasing to protected phasing, Martin Luther King Jr. Way.
25	13th St/G St	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation; **TR MM#5:** Restripe Intersections; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Signalize intersection. Restripe northbound approach from single lane to shared left-through and right-turn lane. Widen eastbound approach to provide a second through lane. Restripe westbound approach from an exclusive right-turn lane to a shared through-right-turn lane.
26	SR 99 NB Off-ramp/SR 140/G St	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection.
31	SR 99 NB Off-ramp/ Yosemite Parkway (SR 140)	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation; **TR MM#5:** Restripe Intersections;	Signalize intersection. Restripe eastbound approach to

Intersection		Mitigation Measure(s)	Specific Action Recommended
		TR MM#7: Widen Approaches to Intersections.	provide a second through lane. Widen westbound approach to add a second through lane.
32	Motel Drive/Glen Ave/ Yosemite Parkway (SR 140)	**TR MM#5:** Restripe Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Restripe southbound approach to provide exclusive right-turn lane and restripe eastbound approach (SR 140) from exclusive right-turn lane to a shared through-right-turn lane.
33	14th St/O St	**TR MM#9:** Convert Two-Way Stop to Four-Way Stop.	Convert two-way stop controlled intersection to an all-way stop controlled intersection.
34	13th St/M St	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection (meets signal warrant between 2020 and 2025).
35	14th St/M St	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection (meets signal warrant between 2020 and 2025).
38	15th St/Canal St	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection (meets signal warrant between 2020 and 2025).
40	11th St/Martin Luther King Jr. Way	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection (meets signal warrant between 2020 and 2025).
44	Main St/H St	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection (meets signal warrant between 2020 and 2025).
46	Main St/G St	**TR MM#6:** Optimize Signal Timing.	Optimize cycle length.

Intersection analysis was performed applying the mitigation measures identified in the table above, and the results of the analysis are presented in Table 7.3-14 in comparison to the future year (2035) No Project conditions, for parking Option A. LOS calculation sheets are presented in Appendix C.

It can be noted from the table that the mitigation measures reduce the project impacts to a less than significant level per the significance criteria guidelines described in Section 3 of this report. With the mitigation measures, no intersection with an LOS of D or better would be degraded to LOS E or F. For those intersections that would operate at LOS E or F with mitigation, the increase in delay would not be more than 4 seconds for signalized intersections and 5 seconds for unsignalized intersections. Hence, the project impact is reduced to a less than significant level. Actual delay values for LOS F conditions are provided in the LOS calculation sheets included in Appendix C.

Table 7.3-14
Future Year (2035) Mitigated Intersection Operating Conditions – Downtown Merced Station (Parking Option A)

Intersection		AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 HST + Mitigations			2035 No Project		2035 HST + Mitigations		
		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
1	16th St/SR 59	F	>50	B	17.1	No	F	>50	D	54.6	No
3	13th St - SR 99 SB Off-ramp/V St	F	>80	F	>80	No	F	>80	F	>80	No

	Intersection	AM Peak Hour 2035 No Project LOS	AM Peak Hour 2035 No Project Del (sec)	AM Peak Hour 2035 HST + Mitigations LOS	AM Peak Hour 2035 HST + Mitigations Del (sec)	AM Impact	PM Peak Hour 2035 No Project LOS	PM Peak Hour 2035 No Project Del (sec)	PM Peak Hour 2035 HST + Mitigations LOS	PM Peak Hour 2035 HST + Mitigations Del (sec)	PM Impact
6	16th St/V St	E	57.6	E	55.5	No	F	>80	F	>80	No
14	15th St/M St	F	>50	B	10.0	No	F	>50	D	40.7	No
18	Childs Ave/Martin Luther King Jr. Way	E	56.7	D	47.6	No	F	>80	E	68.4	No
20	SR 99 SB Ramps/Martin Luther King Jr. Way	F	>50	C	32.9	No	F	>50	B	19.5	No
21	SR 99 NB Ramps/Martin Luther King Jr. Way	F	>50	B	15.1	No	F	>50	C	22.9	No
22	14th St/Martin Luther King Jr. Way	F	>50	B	12.4	No	F	>50	B	14.6	No
24	16th St/Martin Luther King Jr. Way	C	33.3	C	30.1	No	F	>80	E	73.5	No
25	13th St/G St	F	>50	C	22.2	No	F	>50	C	28.3	No
26	SR 99 NB Off-ramp/SR 140/G St	E	39.6	B	12.0	No	F	>50	B	13.5	No
31	SR 99 NB Off-ramp/Yosemite Parkway	F	>50	C	29.8	No	F	>50	D	51.2	No
32	Motel Drive/Glen Ave/Yosemite Parkway (SR 140)	F	>80	F	>80	No	F	>80	F	>80	No
33	14th St/O St	B	10.6	A	8.4	No	B	14.0	B	11.7	No
34	13th St/M St	F	70.2	C	23.6	No	F	136.2	C	30.3	No
35	14th St/M St	D	26.8	A	6.3	No	E	42.6	A	5.4	No
38	15th St/Canal St	B	12.1	A	9.2	No	C	21.0	B	10.2	No
40	11th St/Martin Luther King Jr. Way	F	>50	A	5.1	No	F	OVFL	A	6.7	No
44	Main St/H St	B	11.2	C	24.0	No	B	13.6	D	53.2	No
46	Main St/G St	B	18.3	D	37.0	No	C	21.2	D	50.6	No

For Parking Option B, all of the intersection mitigation measures for Parking Option A, presented in Table 7.3-13, would be applicable except that no mitigation is required for Intersection 33 (14th Street/O Street), as this intersection is not impacted under Option B. Applying these mitigation measures, analysis was performed for the impacted intersections, and the results of the same are presented in Table 7.3-15 in comparison to the future year (2035) No Project conditions. LOS calculation sheets are presented in Appendix C.

It can be noted from the table that the mitigation measures reduce the project impacts to a less than significant level per the significance criteria guidelines described in Section 3 of this report. With the mitigation measures, no intersection with an LOS of D or better would be degraded to LOS E or F. For those intersections that would operate at LOS E or F with mitigation, the increase in delay would not be more than 4 seconds for signalized intersections and 5 seconds for unsignalized intersections. Hence, the project impact is reduced to a less than significant level. Actual delay values for LOS F conditions are provided in the LOS calculation sheets included in Appendix C.

Table 7.3-15

Future Year (2035) Mitigated Intersection Operating Conditions – Downtown Merced Station (Parking Option B)

		AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 HST + Mitigations		Impact	2035 No Project		2035 HST + Mitigations		Impact
	Intersection	LOS	Del (sec)	LOS	Del (sec)		LOS	Del (sec)	LOS	Del (sec)	
1	16th St/SR 59	F	>50	B	17.1	No	F	>50	C	33.5	No
3	13th St - SR 99 SB Off-ramp/V St	F	>80	F	>80	No	F	>80	F	>80	No
6	16th St/V St	E	57.6	E	56.7	No	F	>80	F	>80	No
14	15th St/M St	F	>50	A	7.5	No	F	>50	B	15.9	No
18	Childs Ave/Martin Luther King Jr. Way	E	56.7	D	48.2	No	F	>80	E	69.5	No
20	SR 99 SB Ramps/ Martin Luther King Jr. Way	F	>50	C	32.0	No	F	>50	C	20.1	No
21	SR 99 NB Ramps/ Martin Luther King Jr. Way	F	>50	B	15.5	No	F	>50	C	25.1	No
22	14th St/Martin Luther King Jr. Way	F	>50	B	11.5	No	F	>50	B	14.4	No
24	16th St/Martin Luther King Jr. Way	C	33.3	C	30.1	No	F	>80	E	73.0	No
25	13th St/G St	F	>50	C	22.4	No	F	>50	C	29.0	No
26	SR 99 NB Off-ramp/SR 140/G St	E	39.6	B	12.0	No	F	>50	B	13.5	No
31	SR 99 NB Off-ramp/ Yosemite Parkway	F	>50	D	36.9	No	F	>50	D	36.8	No
32	Motel Drive/Glen Ave/Yosemite Parkway (SR 140)	F	>80	F	>80	No	F	>80	F	>80	No
34	13th St/M St	F	>50	C	22.4	No	F	>50	C	26.6	No
35	14th St/M St	D	26.8	A	5.0	No	E	42.6	A	5.1	No
38	15th St/Canal St	B	12.1	A	9.9	No	C	21.0	B	10.6	No
40	11th St/Martin Luther King Jr. Way	F	>50	A	5.2	No	F	OVFL	A	8.3	No
44	Main St/H St	B	11.2	C	23.7	No	B	13.6	D	52.7	No
46	Main St/G St	B	18.3	D	37.4	No	C	21.2	D	50.7	No

Table 7.3-16 presents the specific mitigation measures recommended for impacted roadway segments surrounding the Downtown Merced Station. These mitigations are applicable to all project alternatives. Applying these mitigation measures reduces the project impacts to a less than significant level per the significance criteria guidelines described in Section 3 of this report.

Table 7.3-16
Future Year (2035) Roadway Segment Mitigation Measures – Merced Station Parking Option A

Roadway Segment Affected	Mitigation Measure(s)	Specific Actions Recommended
Main St Between Yosemite Pkwy (SR 140) and G St	**TR MM#11:** Add Lanes to the Segment.	Add one travel lane in each direction on Main St.
16th St Between R St and Martin Luther King Jr. Way	**TR MM#11:** Add Lanes to the Segment.	Add one travel lane in each direction on 16th St.
M St Between 13th St and 16th St	**TR MM#11:** Add Lanes to the Segment.	Add one travel lane in each direction on M St.
Martin Luther King Jr. Way Between Childs Ave and 13th St	**TR MM#11:** Add Lanes to the Segment.	Add one travel lane in each direction on Martin Luther King Jr. Way.
G St Between 13th St and 16th St	**TR MM#11:** Add Lanes to the Segment.	Add one travel lane in each direction on G St.

7.3.3.3 Mitigation Measures for Pedestrian and Bike Facilities

In the vicinity of the Merced station, the project proposes to provide an overcrossing across the HST tracks near D Street to help with restriction of pedestrian/bike movements caused by closure of this street. The new overcrossing would enable access between the areas to the east and west of the tracks.

7.3.4 Fresno Station

7.3.4.1 Existing with Project Conditions

Table 7.3-17 presents mitigation measures for impacts surrounding the Downtown Fresno Station. These mitigation measures for intersections are identified based on traffic operations, and a conceptual level evaluation of improved intersection lanes geometry and traffic controls that would improve the LOS and the mitigated LOS is presented in Table 7.3-18.

The feasibility of completing each measure would depend on further design work to evaluate specific roadway geometrics during the project's final design. In addition, many intersections are already operating at unacceptable conditions or would be in the future without the project. The HST project would contribute additional traffic to the unacceptable conditions at the intersections identified in the list below but the project is not fully responsible for improving an intersection that is already operating below acceptable criteria.

Table 7.3-17
Existing with Project Mitigation Measures – Fresno Station

Intersection/Location Affected	Mitigation Measure(s)	Specific Actions Recommended
6 - SR 99 NB Ramps/Ventura Ave	**TR MM#5:** Restripe Intersection; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Re-stripe the northbound approach to provide one exclusive left-turn lane and one shared through/right-turn lane at the intersection.
33-0 - Divisadero St/SR 41 NB Ramps/Tulare St	**TR MM#6:** Modify Signal Timing.	Re-time the existing signal.
63 - H St/Divisadero St	**TR MM#6:** Modify Signal Timing.	Re-time the existing signal in AM.
80 -N Blackstone Ave/CA 180 WB Ramps	**TR MM#15:** Modify Signal Timing.	Re-time the existing signal in AM.

Applying these mitigation measures, analysis was performed for the impacted intersections; the results of the same are presented in Table 7.3-18 in comparison to the existing conditions. LOS calculation sheets are presented in Appendix C.

It can be noted from the table that the mitigation measures reduce the project impacts to a less than significant level per the significance criteria guidelines described in Section 3 of this report. With the mitigation measures, no intersection with an LOS of D or better would be degraded to LOS E or F. For those intersections that would operate at LOS E or F with mitigation, the increase in delay would not be more than 4 seconds for signalized intersections and 5 seconds for unsignalized intersections. Hence, the project impact is reduced to a less than significant level.

Table 7.3-18
Existing Mitigated Intersection Operating Conditions – Downtown Fresno Station

Intersection		AM Peak Hour					PM Peak Hour				
		Existing		Existing HST + Mitigations			Existing		Existing HST + Mitigations		
		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
6	SR 99 NB Ramps/Ventura Ave	F	>80	F	>80	No	D	34.5	D	33.5	No
33-0	Divisadero St/SR 41 NB Ramps/Tulare St	F	>80	E	65.6	No	F	>80	F	>80	No
63	H St/ Divisadero St	E	74.7	E	73.0	No	C	33.7	C	34.6	No
80	N Blackstone Ave/CA 180 WB Ramps	F	>80	F	>80	No	B	17.4	B	18.2	No

As no roadway will be impacted by the project, no mitigation measure is proposed.

7.3.4.2 Future Year (2035) With Project Conditions

Table 7.3-19 presents mitigation measures for impacts surrounding the Downtown Fresno Station. These mitigation measures for intersections are identified based on traffic operations, and a conceptual level evaluation of improved intersection lanes geometry and traffic controls that would improve the LOS and the mitigated LOS is presented in Table 7.3-20.

The feasibility of completing each measure would depend on further design work to evaluate specific roadway geometrics during the project's final design. In addition, many intersections are already operating at unacceptable conditions or would be in the future without the project. The HST project would contribute additional traffic to the unacceptable conditions at the intersections identified in the list below but the project is not fully responsible for improving an intersection that is already operating below acceptable criteria.

Table 7.3-19
Mitigation Measures – Downtown Fresno Station

Intersection/Location Affected	Mitigation Measure(s)	Specific Actions Recommended
2 - Van Ness Ave/SR 41 NB Ramp	**TR MM#5:** Restripe Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Re-stripe the eastbound approach to provide one exclusive left-turn lane and one shared left/through/right-turn lane at the intersection.
6 - SR 99 NB Ramps/Ventura Ave	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection.
7 - E St/Ventura Ave	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection.
10 - Van Ness Ave / Ventura St	**TR MM#3:** Modify Signal Phasing.	Modify the existing traffic signal phasing to provide protected left-turn phases for the northbound and southbound approaches.
21 - H St/Kern St	**TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Widen the eastbound approach to provide one exclusive left-turn lane and one exclusive right-turn lane at the intersection.
24 - G St/Tulare St	**TR MM#3:** Modify Signal Phasing; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Modify the existing traffic signal phasing to provide protected left-turn phases for the eastbound and westbound approaches. Widen the westbound approach to provide one exclusive left-turn lane, one exclusive through lane, and one exclusive right-turn lane at the intersection.
25 - H St/Tulare St	**HST undercrossing of Tulare Street:** **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Widen the southbound approach to provide one exclusive left-turn lane, two through lanes, and one exclusive right-turn lane, widen the northbound approach to provide two exclusive left-turn lanes, one exclusive through lane and one

Intersection/Location Affected	Mitigation Measure(s)	Specific Actions Recommended
	HST overcrossing of Tulare Street: H Street and Tulare Street would be grade-separated.	shared through/right-turn lane, and widen the westbound approach to provide one exclusive left-turn lane, two through lanes, and one shared through / right-turn lane at the intersection. It should be noted that implementation of all of the above improvements/road widening may not be feasible due to physical constraints at the intersection caused by existing structures adjacent to the right-of-way along H and Tulare Streets including Chukchansi Park, the Greyhound Bus Station, and the Fresno Fire Department building. **HST overcrossing of Tulare Street:** No mitigation required.
26 - Van Ness Ave/Tulare St	**TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Widen the westbound approach to provide one exclusive left-turn lane, two through lanes, and one exclusive right-turn lane at the intersection.
30 - U St/Tulare St	**TR MM#3:** Modify Signal Phasing.	Modify the existing traffic signal phasing to provide protected left-turn phases for the eastbound and westbound approaches.
37 - SR 99 SB Ramps/Fresno St	**TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Widen the eastbound approach to provide two exclusive through lanes and one exclusive right-turn lane at the intersection.
38 - SR 99 NB Ramps/Fresno St	**TR MM#5:** Restripe Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Restripe the eastbound approach to provide two exclusive left-turn lanes and one exclusive through lane.
42 - Van Ness Avenue/Fresno St	**TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Widen the southbound approach to provide one exclusive left-turn lane, one exclusive through lane, and one exclusive right-turn lane at the intersection.
46 - Fresno St/Divisadero St	**TR MM#3:** Modify Signal Phasing.	Modify the existing traffic signal to provide split phases for the eastbound and westbound approaches at the intersection.
60 - H St/Amador St	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection.

Intersection/Location Affected	Mitigation Measure(s)	Specific Actions Recommended
63 – H St / Divisadero	**TR MM#5:** Restripe Intersections; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Widen the westbound approach to provide one shared through/right-turn lane and three exclusive right turn lanes. Re-stripe the northbound approach to provide two exclusive left turn lanes and one shared through/right-turn lane. Also, provide an additional left turn lane on the southbound approach (H St.). It should be noted that implementation of all of the above improvements/road widening may not be feasible due to physical constraints at the intersection caused by existing structures adjacent to the right-of-way of H and Divisadero Streets.
66 - Van Ness Ave/Divisadero St	**TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Widen the eastbound and westbound approaches to provide one shared left/through lane, one exclusive through lane and one exclusive right-turn lane at the intersection.
67 – H St / Roosevelt St	**TR MM#5:** Restripe Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Re-stripe the eastbound approach (H St.) to provide one shared left/through lane, and one exclusive through lane and one shared through/right-turn lane.
68 - N Blackstone Ave/E Mckenzie Ave	**TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Widen the westbound approach to provide one exclusive left-turn lane and one exclusive through lane.
71 - Van Ness Ave/CA 180 EB Ramps	**TR MM#5:** Restripe Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Restripe the northbound approach to provide one exclusive through lane, one shared through/right-turn lane, and one exclusive right-turn lane at the intersection.
73 - Van Ness Ave/CA 180 WB Ramps	**TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Widen the eastbound approach to provide one additional exclusive left-turn lane at the intersection.
74 - N Blackstone Ave/E Belmont Ave	**TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Widen the southbound approach to provide one exclusive left-turn lane, two exclusive through lanes, and one shared through/right-turn lane at the intersection.
79 - N Abby St/CA 180 EB Ramps	**TR MM#5:** Restripe Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Re-stripe the northbound approach to provide one shared left/through lane, one exclusive through lane, one shared through/right-turn lane, and one exclusive right-turn lane at the intersection.
80 -N Blackstone Ave/CA 180 WB Ramps	**TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Widen the eastbound approach to provide one additional exclusive right-turn lane at the intersection.

Intersection/Location Affected	Mitigation Measure(s)	Specific Actions Recommended
81 - Broadway St/Amador St	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Install a traffic signal with split phases for the eastbound and westbound approaches along with protected left turn phases for the northbound and southbound approaches.
92 - S Van Ness Ave/E California Ave	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Signalize intersection. Provide exclusive left turn lanes in both NB and SB directions with protected plus permissive left turn phasing.
96 - Golden State Blvd/E Church Ave	**TR MM#3:** Modify signal phasing; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Provide an exclusive right turn lane in the northbound direction. Modify signal phasing on all approaches to provide protected plus permissive left turn phase.
98 - S East Ave/E Church Ave	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection.
99 – S Sunland Ave/E Church Ave	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection.
101 - S East Ave / Golden State Blvd	**TR MM#6:** Modify signal timing.	Increase cycle length (in the PM Peak Hour only).
102 - Golden State Blvd/E Jensen Ave	**TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Provide an exclusive right turn lane for both Northbound and Southbound approaches.

Applying these mitigation measures, analysis was performed for the impacted intersections; the results of the same are presented in Table 7.3-20 in comparison to the future year (2035) No Project conditions. LOS calculation sheets are presented in Appendix C.

It can be noted from the table that the mitigation measures reduce the project impacts to a less than significant level per the significance criteria guidelines described in Section 3 of this report. With the mitigation measures, no intersection with an LOS of D or better would be degraded to LOS E or F. For those intersections that would operate at LOS E or F with mitigation, the increase in delay would not be more than 4 seconds for signalized intersections and 5 seconds for unsignalized intersections. Hence, the project impact is reduced to a less than significant level.

Table 7.3-20
Future Year (2035) Mitigated Intersection Operating Conditions – Downtown Fresno Station

Intersection		AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 With Project + Mitigations		Impact	2035 No Project		2035 With Project + Mitigations		Impact
		LOS	Del (sec)	LOS	Del (sec)		LOS	Del (sec)	LOS	Del (sec)	
2	Van Ness Ave/SR 41 Northbound Ramp	E	45.8	C	20.6	No	C	19.3	C	19.6	No

	Intersection	AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 With Project + Mitigations		Impact	2035 No Project		2035 With Project + Mitigations		Impact
		LOS	Del (sec)	LOS	Del (sec)		LOS	Del (sec)	LOS	Del (sec)	
6	SR 99 NB Ramps/Ventura Ave	F	>50	C	26.6	No	F	*	E	73.9	No
7	E St/Ventura Ave	F	*	A	8.2	No	F	*	F	>80	No
10	Van Ness Ave/Ventura Ave	C	22.2	D	35.3	No	F	>80	E	66.3	No
21	H St/Kern St	D	25.9	C	24.3	No	E	35.8	D	26.3	No
24	G St/Tulare St	C	27.1	D	43.4	No	F	>80	F	>80	No
25	H St/Tulare St	B	12.0	B	14.6	No	D	45.7	D	49.7	No
26	Van Ness Ave/Tulare St	C	25.4	C	27.5	No	F	>80	F	>80	No
30	U St/Tulare St	A	8.7	B	17.6	No	E	79.8	E	68.7	No
37	SR 99 SB Ramps/Fresno St	E	56.4	D	41.6	No	F	>80	F	>80	No
38	SR 99 NB Ramps/Fresno St	D	43.6	C	34.1	No	F	>80	F	>80	No
42	Van Ness Ave/Fresno St	C	29.1	C	29.4	No	E	70.1	E	57.9	No
46	Fresno St/Divisadero St	C	28.7	D	40.7	No	F	>80	F	>80	No
60	H St/Amador St	C	21.5	A	5.4	No	F	>50	B	13.7	No
63	H St/Divisadero St	F	>80	F	>80	No	F	>80	F	>80	No
66	Van Ness Ave/ Divisadero St	C	24.0	B	18.0	No	F	>80	E	57.7	No
67	North Roosevelt Ave/H St	B	19.3	B	13.1	No	F	>80	F	>80	No
68	N Blackstone Ave/E Mckenzie Ave	B	10.5	B	10.4	No	F	>80	C	31.4	No
71	Van Ness Ave/SR 180 EB Ramps	C	33.4	C	30.8	No	F	>80	E	65.0	No
73	Van Ness Ave/SR 180 WB Ramps	D	39.3	B	13.8	No	F	>80	B	20.0	No
74	N Blackstone Ave/E Belmont Ave	F	>80	E	67.4	No	F	>80	F	>80	No
79	N Abby St/SR 180 EB Ramps	F	43.4	B	13.4	No	F	>80	C	26.6	No
80	N Blackstone Ave/SR 180 WB Ramps	C	>80	D	46.3	No	F	>80	F	>80	No

	Intersection	AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 With Project + Mitigations		Impact	2035 No Project		2035 With Project + Mitigations		Impact
		LOS	Del (sec)	LOS	Del (sec)		LOS	Del (sec)	LOS	Del (sec)	
81	Broadway St/Amador St	E	18.6	A	3.9	No	F	*	F	>50	No
92	S Van Ness Ave/E California Ave	F	>50	B	12.9	No	F	*	D	49.7	No
96	Golden State Blvd/E Church Ave	D	41.8	D	50.3	No	F	>80	F	>80	No
98	S East Ave/E Church Ave	F	>50	B	10.4	No	F	*	C	25.2	No
99	S Sunland Ave/E Church Ave	F	>50	A	5.2	No	C	16.3	A	5.1	No
101	S East Ave / Golden State Blvd	D	38.8	-	-	No	B	19.4	B	19.9	No
102	Golden State Blvd/E Jensen Ave	F	>80	F	>80	No	F	>80	F	>80	No

Notes:
* = Volumes at the intersection exceed theoretical capacity. As a result, average delay cannot be predicted.
Delay time is reported in seconds.
Source: Fresno to Bakersfield Transportation Technical Report (Authority and FRA, 2011).

Table 7.3-21 presents the mitigation measures recommended for impacted roadway segments surrounding the Downtown Fresno Station. These station impacts are applicable to all project alternatives. Applying these mitigation measures reduces the project impacts to a less than significant level per the significance criteria guidelines described in Section 3 of this report.

Table 7.3-21
Roadway Mitigation Measures – Fresno Station

Roadway Segment Affected	Mitigation Measure(s)	Specific Actions Recommended
Tulare St Between Broadway St and Van Ness Ave	**TR MM#11:** Add Lanes to the Segment.	Add one travel lane in each direction on Tulare St.
Divisadero St Between N. Fresno St and SR 41 Ramps	**TR MM#11:** Add Lanes to the Segment.	Add one travel lane in each direction on Divisadero St.

7.4 Mitigation Measures for HMF Site Intersection Impacts

7.4.1 Castle Commerce Heavy Maintenance Facility

7.4.1.1 Exisiting with Project Conditions

To reduce the project impacts to a less than significant level, mitigation measures were identified at the impacted locations for Castle Commerce Center HMF. These measures are presented in Table 7.4-1.

Table 7.4-1
Existing with Project Mitigation Measures – Castle Commerce Center HMF

Intersection		Mitigation Measure(s)	Specific Actions Recommended
11	Ashby Rd / Buhach Rd	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize the intersection.
25	16th St / SR 59	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize the intersection.
37	15th St / M St	**TR MM#7:** Widen Approaches to Intersections.	Widen eastbound and westbound approaches to provide one left-through lane and one right-through lane.
45	14th St / Martin Luther King Jr. Way	*	*
48	13th St/ G St	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize the intersection.
54	SR 99 NB Off-ramp / Yosemite Pkwy (SR 140)	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize the intersection.
62	16th St / Canal St	**TR MM#5:** Restripe Intersection.	Restripe eastbound approach from one shared-through left lane and one exclusive right-turn lane to one exclusive left-turn lane and a shared through-right lane.
67	Main St / H St	**TR MM#9:** Convert Two-Way Stop to Four-Way Stop.	Convert two-way stop controlled intersection to an all-way stop controlled intersection.

Notes:

* Intersection 45, 14th Street / Martin Luther King Jr. Way, does not meet the signal warrant, and widening the approaches at the intersection does not improve LOS. This location meets signal warrant under the future conditions and can be signalized under that scenario (see Table 7.4-4).

For impacted intersections under Parking Option B (Intersections 11, 25, 37, 45, 48, 54, 62, and 67), mitigation measures identified for Parking Option A would be applicable.

Applying the mitigation measures identified in the table above, intersection analysis was performed and the results of the analysis are presented in Tables 7.4-2 and 7.4-3 for Options A and B, respectively, in comparison to the existing conditions. LOS calculation sheets are presented in Appendix C. It can be noted from the table that the mitigation measures reduce the project impacts to a less than significant level per the significance criteria guidelines described in Section 3 of this report.

Table 7.4-2
Existing Mitigated Intersection Operating Conditions – Castle Commerce Center HMF (Option A)

		AM Peak Hour					PM Peak Hour				
		Existing		Existing HST + Mitigations			Existing		Existing HST + Mitigations		
Intersection		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
11	Ashby Rd/Buhach Rd	F	>50	B	11.6	No	F	>50	B	12.2	No
25	16th St / SR 59	C	16.3	C	17.0	No	F	>50	C	23.8	No
37	15th St / M St	B	11.0	C	16.2	No	B	12.7	D	33.0	No
48	13th St/ G St	B	12.9	C	28.8	No	C	15.4	C	30.4	No
54	SR 99 NB Off-ramp / Yosemite Pkwy (SR 140)	F	>50	F	>50	No	F	>50	C	31.3	No
62	16th St / Canal St	C	22.2	D	31.2	No	E	36.7	F	>50	No
67	Main St / H St	A	10.0	C	21.1	No	B	10.9	B	12.5	No

Table 7.4-3
Existing Mitigated Intersection Operating Conditions – Castle Commerce Center HMF (Option B)

		AM Peak Hour					PM Peak Hour				
		Existing		Existing HST + Mitigations			Existing		Existing HST + Mitigations		
Intersection		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
11	Ashby Rd/Buhach Rd	F	>50	B	11.6	No	F	>50	B	12.2	No
25	16th St / SR 59	C	16.3	C	17.0	No	F	>50	C	23.8	No
37	15th St / M St	B	11.0	D	30.9	No	B	12.7	B	18.5	No
48	13th St/ G St	B	12.9	C	12.6	No	C	15.4	B	14.9	No
54	SR 99 NB Off-ramp / Yosemite Pkwy (SR 140)	F	>50	F	>50	No	F	>50	C	31.9	No
62	16th St / Canal St	C	22.2	D	30.9	No	E	36.7	F	>50	No
67	Main St / H St	A	10.0	C	21.3	No	B	10.9	B	12.4	No

7.4.1.2 Future Year (2035) With Project Conditions

To reduce the project impacts to a less than significant level, mitigation measures were identified at the impacted locations for Castle Commerce Center HMF. These measures are presented in Table 7.4-4.

Table 7.4-4
Future Year (2035) with Project Mitigation Measures – Castle Commerce Center HMF

Intersection		Mitigation Measure(s)	Specific Actions Recommended
2	Atwater Blvd/ Winton Way	**TR MM#5:** Restripe Intersections; **TR MM#6:** Optimize Signal Cycle Length; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Restripe the eastbound approach from shared through-left-turn lane and shared through-right-turn lane to exclusive left-turn lane and shared through-right-turn lane. Change eastbound, westbound movements from split phasing to protected left-turn movements. Optimize signal timing.
4	Sycamore Ave/ Applegate Rd	**TR MM#6:** Optimize Signal Cycle Length; **TR MM#7:** Widen Approaches to Intersections.	Widen the westbound approach from one lane to shared through-left-turn and shared through-right-turn lanes. Optimize signal timing.
16	Santa Fe Dr/ W Ave 2	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Signalize the intersection. Widen eastbound approach from one shared left-right turn lane to one exclusive left and one exclusive right-turn lane. “Overlap” eastbound right turn with northbound left turn movement.
19	Santa Fe Dr/ Belcher Ave	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection.
20	Santa Fe Dr/W Olive Ave/SR 59	**TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Widen eastbound approach to provide a second right-turn lane.
25	16th St/ SR 59	**TR MM#3:** Modify signal phasing to improve LOS/Operation; **TR MM#4:** Add Signal to Intersection to Improve LOS/Operation; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Signalize intersection. Widen northbound approach to add second right-turn lane. Widen westbound approach to add second left-turn lane. Modify signal phasing to “overlap” northbound right turn movement with westbound left turn movement and westbound right turn with southbound left turn movement.
26	13th St – SR 99 SB Off-ramp/ V St	**TR MM#5:** Restripe Intersections; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Restripe the southbound approach (SR 140) from left-turn, through, shared through-right-turn lane to left-turn, shared through-left-turn, and shared through-right-turn lane. Widen SR 99 SB off-ramp to add exclusive right turn lane.
29	16th St/V St	**TR MM#6:** Optimize Signal Timing.	Optimize cycle length.

Intersection		Mitigation Measure(s)	Specific Actions Recommended
37	15th St/M St	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Signalize intersection (meets signal warrant between 2020 and 2025). Widen northbound, eastbound and westbound approaches to provide left-turn lanes.
38	16th St/M St	**TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Widen northbound and southbound approaches to provide second left-turn lanes.
41	Childs Ave/Martin Luther King Jr. Way	**TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Widen southbound approach on Childs Avenue to provide exclusive right-turn lane.
43	SR 99 SB Ramps/ Martin Luther King Jr. Way	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection.
44	SR 99 NB Ramps/ Martin Luther King Jr. Way	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection.
45	14th St/Martin Luther King Jr. Way	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection.
48	13th St/G St	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation; **TR MM#5:** Restripe Intersections; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Signalize intersection. Restripe northbound approach from single lane to shared left-through and right-turn lane. Widen eastbound approach to provide a second through lane. Restripe westbound approach from an exclusive right-turn lane to a shared through-right-turn lane.
49	SR 99 SB Off-ramp/ 14th St/G St	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection.
54	SR 99 NB Off-ramp/ Yosemite Pkwy (SR 140)	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation; **TR MM#5:** Restripe Intersections; **TR MM#7:** Widen Approaches to Intersections.	Signalize intersection. Restripe eastbound approach to provide a second through lane. Widen westbound approach to add a second through lane.
55	Motel Dr/Glen Ave/ Yosemite Pkwy (SR 140)	**TR MM#5:** Restripe Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Restripe southbound approach to provide exclusive right-turn lane and restripe eastbound approach (SR 140) from exclusive right-turn lane to a shared through-right-turn lane.
56	14th St/O St	**TR MM#9:** Convert Two-Way Stop to Four-Way Stop.	Convert two-way stop controlled intersection to an all-way stop controlled intersection.

Intersection		Mitigation Measure(s)	Specific Actions Recommended
57	13th St/M St	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection (meets signal warrant between 2020 and 2025).
58	14th St/M St	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection (meets signal warrant between 2030 and 2035).
61	15th St/Canal St	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection (meets signal warrant between 2030 and 2035).
63	11th St/Martin Luther King Jr. Way	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection (meets signal warrant between 2025 and 2030).
67	Main St/H St	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection (meets signal warrant between 2030 and 2035).
69	Main St/G St	**TR MM#6:** Optimize Signal Timing.	Optimize cycle length.

Intersection analysis was performed applying the mitigation measures identified in the table above, and the results of the analysis are presented in Table 7.4-5 in comparison to the No Project conditions. LOS calculation sheets are presented in Appendix C.

It can be noted from the table that the mitigation measures reduce the project impacts to a less than significant level per the significance criteria guidelines described in Section 3 of this report. With the mitigation measures, no intersection with an LOS of D or better would be degraded to LOS E or F. For those intersections that would operate at LOS E or F with mitigation, the increase in delay would not be more than 4 seconds for signalized intersections and 5 seconds for unsignalized intersections. Hence, the project impact is reduced to a less than significant level. Actual delay values for LOS F conditions are provided in the LOS calculation sheets included in Appendix C.

Table 7.4-5
Future Year (2035) Mitigated Intersection Operating Conditions –
Castle Commerce Center HMF (Option A)

		AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 HST + Mitigations		Impact	2035 No Project		2035 HST + Mitigations		Impact
Intersection		LOS	Del (sec)	LOS	Del (sec)		LOS	Del (sec)	LOS	Del (sec)	
2	Atwater Blvd/ Winton Way	D	44.7	C	33.2	No	F	>80	F	>80	No
4	Sycamore Ave/ Applegate Rd	D	36.9	B	19.8	No	F	>80	D	45.3	No
16	Santa Fe Dr/W Avenue 2	F	>50	C	24.5	No	F	>50	B	15.8	No
19	Santa Fe Dr/Belcher Ave	C	20.5	B	18.6	No	F	>50	D	45.0	No

	Intersection	AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 HST + Mitigations		Impact	2035 No Project		2035 HST + Mitigations		Impact
		LOS	Del (sec)	LOS	Del (sec)		LOS	Del (sec)	LOS	Del (sec)	
20	Santa Fe Dr/W Olive Ave/SR 59	E	72.7	E	57.6	No	F	>80	F	>80	No
25	16th St/ SR 59	F	>50	B	17.1	No	F	>50	D	54.6	No
26	13th St – SR 99 SB Off-ramp/ V St	F	>80	F	81.4	No	F	>80	F	99.9	No
29	16th St/V St	E	57.6	E	55.5	No	F	>80	F	118.2	No
37	15th St/M St	F	>50	C	27.6	No	F	>50	D	47.0	No
38	16th St/M St	D	36.0	D	37.6	No	D	43.8	D	54.1	No
41	Childs Ave/Martin Luther King Jr. Way	E	56.7	D	47.6	No	F	>80	E	68.4	No
43	SR 99 SB Ramps/ Martin Luther King Jr. Way	F	>50	C	31.6	No	F	>50	B	18.9	No
44	SR 99 NB Ramps/ Martin Luther King Jr. Way	F	>50	B	14.9	No	F	>50	C	21.3	No
45	14th St/Martin Luther King Jr. Way	F	>50	B	14.9	No	F	>50	B	16.9	No
48	13th St/G St	F	>50	C	22.2	No	F	>50	C	28.3	No
49	SR 99 SB Off-ramp/ 14th St/G St	E	39.6	B	12.0	No	F	>50	B	13.5	No
54	SR 99 NB Off-ramp/ Yosemite Pkwy (SR 140)	F	>50	C	29.8	No	F	OVFL	D	51.2	No
55	Motel Dr/Glen Ave/ Yosemite Pkwy (SR 140)	F	>80	F	194.0	No	F	>80	F	>80	No
56	14th St/O St	B	10.6	A	8.4	No	B	14.0	B	11.7	No
57	13th St/M St	F	>50	C	28.5	No	F	>50	E	58.9	No
58	14th St/M St	D	26.8	A	6.4	No	E	42.6	A	5.5	No
61	15th St/Canal St	B	12.1	A	9.4	No	C	21.0	B	11.5	No
63	11th St/Martin Luther King Jr. Way	F	>50	A	5.1	No	F	OVFL	A	6.7	No
67	Main St/H St	B	11.2	C	24.0	No	B	13.6	D	53.2	No
69	Main St/G St	B	18.3	D	37.0	No	C	21.2	D	50.6	No

Table 7.4-4 lists mitigation for Parking Option A. For Option B, all of the intersection mitigation measures for Parking Option A would be applicable except that no mitigation is required for Intersections 43 (SR 99 Southbound Ramps and Martin Luther King Jr. Way), 56 (14th St and O St), and 61(15th St and Canal St), as these intersections are not significantly impacted under Option B.

Intersection analysis was performed applying the mitigation measures identified in the table above, and the results of the analysis are presented in Table 7.4-6 in comparison to the future year (2035) No Project conditions. LOS calculation sheets are presented in Appendix C.

It can be noted from the table that the mitigation measures reduce the project impacts to a less than significant level per the significance criteria guidelines described in Section 3 of this report. With the mitigation measures, no intersection with an LOS of D or better would be degraded to LOS E or F. For those intersections that would operate at LOS E or F with mitigation, the increase in delay would not be more than 4 seconds for signalized intersections and 5 seconds for unsignalized intersections. Hence, the project impact is reduced to a less than significant level. Actual delay values for LOS F conditions are provided in the LOS calculation sheets included in Appendix C.

Table 7.4-6
Future Year (2035) Mitigated Intersection Operating Conditions –
Castle Commerce Center HMF (Option B)

		AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 HST + Mitigations			2035 No Project		2035 HST + Mitigations		
Intersection		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
2	Atwater Blvd/ Winton Way	D	44.7	C	33.2	No	F	>80	F	>80	No
4	Sycamore Ave/ Applegate Rd	D	36.9	B	19.8	No	F	>80	D	45.3	No
16	Santa Fe Dr/W Ave 2	F	>50	C	24.5	No	F	>50	B	15.8	No
19	Santa Fe Dr/Belcher Ave	C	20.5	B	18.6	No	F	>50	D	45.0	No
20	Santa Fe Dr/W Olive Ave/SR 59	E	56.2	E	57.6	No	F	>80	F	>80	No
25	16th St/ SR 59	F	>50	B	17.1	No	F	>50	D	54.6	No
26	13th St – SR 99 SB Off-ramp/ V St	F	>80	F	>80	No	F	>80	F	>80	No
29	16th St/V St	E	57.6	E	56.7	No	F	>80	F	>80	No
37	15th St/M St	F	>50	C	21.3	No	F	>50	D	41.8	No
38	16th St/M St	D	36.0	D	37.5	No	D	43.8	D	53.6	No
41	Childs Ave/Martin Luther King Jr. Way	E	56.7	D	48.2	No	F	>80	E	69.5	No
44	SR 99 NB Ramps/ Martin Luther King Jr. Way	F	>50	B	15.3	No	F	>50	C	22.8	No

Intersection		AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 HST + Mitigations		Impact	2035 No Project		2035 HST + Mitigations		Impact
		LOS	Del (sec)	LOS	Del (sec)		LOS	Del (sec)	LOS	Del (sec)	
45	14th St/Martin Luther King Jr. Way	F	>50	B	13.6	No	F	>50	B	15.9	No
48	13th St/G St	F	>50	C	22.4	No	F	>50	C	29.0	No
49	SR 99 SB Off-ramp/ 14th St/G St	E	39.6	B	12.0	No	F	>50	B	13.5	No
54	SR 99 NB Off-ramp/ Yosemite Pkwy (SR 140)	F	>50	C	29.9	No	F	OVFL	D	52.0	No
55	Motel Dr/Glen Ave/ Yosemite Pkwy (SR 140)	F	>80	F	194.0	No	F	>80	F	110.3	No
57	13th St/M St	F	>50	C	26.7	No	F	>50	D	52.1	No
58	14th St/M St	D	26.8	A	5.2	No	E	42.6	A	5.3	No
63	11th St/Martin Luther King Jr. Way	F	>50	A	5.2	No	F	OVFL	A	8.3	No
67	Main St/H St	B	11.2	C	23.7	No	B	13.6	D	52.7	No
69	Main St/G St	B	18.3	D	37.4	No	C	21.2	D	50.7	No

7.4.2 Harris-DeJager Heavy Maintenance Facility

7.4.2.1 Existing With Project Conditions

Table 7.4-7 presents the mitigation measures for the Harris-DeJager HMF that would reduce project impacts to a less than significant level. Under existing conditions, SR 99 is an at-grade intersection with Sandy Mush Road. The only feasible mitigation measure is to construct an interchange at this location, as signalization would be an impractical mitigation measure at a freeway intersection. However, this measure is a future planned improvement project already identified and funded by Caltrans, as identified in the Madera County RTP and included in the 2035 No Project definition.

Table 7.4-7
Existing with Project Mitigation Measures – Harris-DeJager HMF

Intersection		Mitigation Measure(s)	Specific Actions Recommended
1	SR 99/Sandy Mush Rd	NA*	Construct interchange (as planned by Caltrans and programmed for construction in 2011)
*NA – Not applicable because new interchange already funded at this location.			

7.4.2.2 Future Year (2035) With Project Conditions

To reduce the project impacts to a less than significant level, signalization was identified as a mitigation measure at the impacted intersection SR 59 at Sandy Mush Road, as identified in Table 7.4-8.

Table 7.4-8
Future Year (2035) with Project Mitigation Measures – Harris-DeJager HMF

Intersection		Mitigation Measure(s)	Specific Actions Recommended
1	SR 59/E Sandy Mush Rd	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize intersection. (meets signal warrant in 2035)

Intersection analysis was performed applying the mitigation measure, and the result of the analysis is presented in Table 7.4-9 in comparison to the future year (2035) No Project conditions. LOS calculation sheets are presented in Appendix C. It can be noted from the table that signalization of the intersection improves the intersection operating condition to LOS A in the AM and PM peak hours, thus reducing the project impact to a less than significant level.

Table 7.4-9
Future Year (2035) Mitigated Intersection Operating Conditions – Harris-DeJager HMF

Intersection		AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 HST + Mitigations		Impact	2035 No Project		2035 HST + Mitigations		Impact
		LOS	Del (sec)	LOS	Del (sec)		LOS	Del (sec)	LOS	Del (sec)	
1	SR 59/E Sandy Mush Rd	E	36.8	B	13.9	No	F	>50	B	14.3	No

7.4.3 Fagundes Heavy Maintenance Facility

7.4.3.1 Existing With Project Conditions

To reduce the project impacts to a less than significant level, mitigation measures were identified at the impacted locations for Fagundes HMF. These measures are presented in Table 7.4-10.

Table 7.4-10
Existing with Project Mitigation Measures – Fagundes HMF

Intersection		Mitigation Measure(s)	Specific Actions Recommended
2	Rd 13/SR 152 – Ave 23	*	*
6	SR 233/Ave 25	*	*
8	SR 99 NB Ramps / Robertson Blvd–Ave 26	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize the intersection.

*The two impacted locations (Intersections 2 and 6) do not meet signal warrants, and other mitigations such as widening would not bring the LOS to D or better. These locations meet signal warrants under the future conditions and can be signalized under that scenario (see Table 7.4-12).

Intersection analysis was performed applying the mitigation measures identified in the table above, and the results of the analysis are presented in Table 7.4-11 in comparison to the existing conditions. LOS calculation sheets are presented in Appendix C. It can be noted from the table that the mitigation measures reduce the project impacts to a less than significant level.

Table 7.4-11
Existing Mitigated Intersection Operating Conditions – Fagundes HMF

Intersection		AM Peak Hour					PM Peak Hour				
		Existing		Existing HST + Mitigations		Impact	Existing		Existing HST + Mitigations		Impact
		LOS	Del (sec)	LOS	Del (sec)		LOS	Del (sec)	LOS	Del (sec)	
8	SR 99 NB Ramps / Robertson Blvd–Ave 26	D	30.1	A	7.7	No	D	27.1	A	8.1	No

7.4.3.2 Future Year (2035) With Project Conditions

To reduce the project impacts to a less than significant level, mitigation measures were identified at the impacted locations for Fagundes HMF. These measures are presented in Table 7.4-12.

Table 7.4-12
Future Year (2035) with Project Mitigation Measures – Fagundes HMF

Intersection		Mitigation Measure(s)	Specific Actions Recommended
2	Rd 13/SR 152 – Ave 23	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize the intersection.
6	SR 233/Ave 25	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize the intersection. (meets signal warrant between 2020 and 2025)
7	SR 99 SB Ramps / SR 233 – Ave 26	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize the intersection.
8	SR 99 NB Ramps/SR 233 – Ave 26	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize the intersection.

Intersection analysis was performed Applying the mitigation measures identified in the table above, and the results of the analysis are presented in Table 7.4-13 in comparison to the future year (2035) No Project conditions. LOS calculation sheets are presented in Appendix C. It can be noted from the table that the mitigation measures reduce the project impacts to a less than significant level.

Table 7.4-13
Future Year (2035) Mitigated Intersection Operating Conditions – Fagundes HMF

Intersection		AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 HST + Mitigations		Impact	2035 No Project		2035 HST + Mitigations		Impact
		LOS	Del (sec)	LOS	Del (sec)		LOS	Del (sec)	LOS	Del (sec)	
2	Rd 13/SR 152 – Ave 23	E	41.9	B	11.5	No	F	>50	B	14.7	No
6	SR 233/Ave 25	F	>50	C	20.2	No	F	>50	B	17.3	No
7	SR 99 SB Ramps/SR 233 – Ave 26	F	>50	B	14.2	No	F	>50	B	11.3	No
8	SR 99 NB Ramps/SR 233 – Ave 26	F	>50	B	17.0	No	F	>50	B	17.0	No

7.4.4 Gordon-Shaw Heavy Maintenance Facility

7.4.4.1 Existing With Project Conditions

To reduce the project impacts to a less than significant level, mitigation measures were identified at the impacted locations for Gordon-Shaw HMF. These measures are presented in Table 7.4-14.

Table 7.4-14
Existing with Project Mitigation Measures – Gordon-Shaw HMF

Intersection		Mitigation Measure(s)	Specific Actions Recommended
4	Rd 24/Ave 19	**TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Widen the northbound approach from one lane to one exclusive left-turn and one shared through right-turn lane.

Intersection analysis was performed applying the mitigation measures identified in the table above, and the results of the analysis are presented in Table 7.4-15 in comparison to the existing conditions. LOS calculation sheets are presented in Appendix C. It can be noted from the table that the mitigation measures reduce the project impacts to a less than significant level.

Table 7.4-15
Existing Mitigated Intersection Operating Conditions – Gordon-Shaw HMF

Intersection		AM Peak Hour					PM Peak Hour				
		Existing		Existing HST + Mitigations		Impact	Existing		Existing HST + Mitigations		Impact
		LOS	Del (sec)	LOS	Del (sec)		LOS	Del (sec)	LOS	Del (sec)	
4	Rd 24/Ave 19	A	9.0	D	33.1	No	A	9.2	D	28.1	No

7.4.4.2 Future Year (2035) With Project Conditions

To reduce the project impacts to a less than significant level, mitigation measures were identified at the impacted locations for Gordon-Shaw HMF. These measures are presented in Table 7.4-16.

Table 7.4-16
Future Year (2035) with Project Mitigation Measures – Gordon-Shaw HMF

Intersection		Mitigation Measure(s)	Specific Actions Recommended
1	SR 99 SB Ramps/Ave 20½	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize the intersection. (meets signal warrant in 2035)
4	Rd 24/Ave 19	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize the intersection. (meets signal warrant in 2035)
5	Rd 24/Ave 18½	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize the intersection. (meets signal warrant in 2035)
6	SR 99 SB Ramps/Ave 18½	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize the intersection. (meets signal warrant between 2020 and 2025)
7	SR 99 NB Ramps/Ave 18½	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Signalize the intersection. (meets signal warrant between 2020 and 2025) Widen the northbound approach from one lane to one shared through-left-turn lane and one exclusive right-turn lane.

Intersection analysis was performed Applying the mitigation measures identified in the table above, and the results of the analysis are presented in Table 7.4-17 in comparison to the future year (2035) No Project conditions. LOS calculation sheets are presented in Appendix C. It can be noted from the table that the mitigation measures reduce the project impacts to a less than significant level.

Table 7.4-17
Future Year (2035) Mitigated Intersection Operating Conditions – Gordon-Shaw HMF

		AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 HST + Mitigations			2035 No Project		2035 HST + Mitigations		
Intersection		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
1	SR 99 SB Ramps/ Ave 20½	B	11.0	B	11.4	No	F	>50	A	8.9	No
4	Rd 24/Ave 19	A	9.8	B	11.7	No	B	10.3	B	13.6	No
5	Rd 24/Ave 18½	B	10.3	B	12.7	No	B	11.2	B	14.2	No
6	SR 99 SB Ramps/ Ave 18½	F	>50	B	12.1	No	F	>50	B	17.9	No
7	SR 99 NB Ramps/ Ave 18½	F	>50	C	22.6	No	F	>50	C	27.4	No

7.4.5 Kojima Development Heavy Maintenance Facility

7.4.5.1 Existing With Project Conditions

To reduce the project impacts to a less than significant level, mitigation measures were identified at the impacted locations for Kojima Development HMF. These measures are presented in Table 7.4-18.

Table 7.4-18
Existing with Project Mitigation Measures – Kojima Development HMF

Intersection		Mitigation Measure(s)	Specific Actions Recommended
1	SR 99 SB Ramps/E Robertson Blvd	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize the intersection.
2	SR 99 NB Ramps/E Robertson Blvd	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize the intersection.

Intersection analysis was performed Applying the mitigation measures identified in the table above, and the results of the analysis are presented in Table 7.4-19 in comparison to the existing conditions. LOS calculation sheets are presented in Appendix C. It can be noted from the table that the mitigation measures reduce the project impacts to a less than significant level.

Table 7.4-19
Existing Mitigated Intersection Operating Conditions – Kojima Development HMF

		AM Peak Hour					PM Peak Hour				
		Existing		Existing HST + Mitigations			Existing		Existing HST + Mitigations		
	Intersection	LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
1	SR 99 SB Ramps/E Robertson Blvd	C	22.4	A	9.5	No	C	20.6	A	9.1	No
2	SR 99 NB Ramps/E Robertson Blvd	D	30.1	A	8.3	No	D	27.1	A	9.8	No

7.4.5.2 Future Year (2035) With Project Conditions

To reduce the project impacts to a less than significant level, mitigation measures were identified at the impacted locations for Kojima Development HMF. These measures are presented in Table 7.4-20.

Table 7.4-20
Future Year (2035) with Project Mitigation Measures – Kojima Development HMF

Intersection		Mitigation Measure(s)	Specific Actions Recommended
1	SR 99 SB Ramps/E Robertson Blvd	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize the intersection.
2	SR 99 NB Ramps/E Robertson Blvd	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections.	Signalize the intersection. Widen the northbound approach from one lane to one exclusive left-turn and one exclusive right-turn lane.
4	Santa Fe Drive/Ave 26	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize the intersection.
6	Rd 22/Ave 24	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize the intersection.
7	SR 99 NB Ramps/Ave 24	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize the intersection.
8	SR 99 SB Ramps/Ave 24	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation.	Signalize the intersection.

Intersection analysis was performed applying the mitigation measures identified in the table above, and the results of the analysis are presented in Table 7.4-21 in comparison to the future year (2035) No

Project conditions. LOS calculation sheets are presented in Appendix C. It can be noted from the table that the mitigation measures reduce the project impacts to a less than significant level.

Table 7.4-21
Future Year (2035) Mitigated Intersection Operating Conditions – Kojima Development HMF

Intersection		AM Peak Hour					PM Peak Hour				
		2035 No Project		2035 HST + Mitigations			2035 No Project		2035 HST + Mitigations		
		LOS	Del (sec)	LOS	Del (sec)	Impact	LOS	Del (sec)	LOS	Del (sec)	Impact
1	SR 99 SB Ramps/E Robertson Blvd	F	>50	B	16.2	No	F	>50	B	10.9	No
2	SR 99 NB Ramps/ E Robertson Blvd	F	>50	B	19.6	No	F	>50	C	23.6	No
4	Santa Fe Drive/ Ave 26	B	10.9	B	13.7	No	B	11.5	B	13.4	No
6	Rd 22/Ave 24	C	24.2	B	16.1	No	B	13.8	B	13.0	No
7	SR 99 NB Ramps/ Ave 24	F	>50	A	9.3	No	D	31.4	A	6.5	No
8	SR 99 SB Ramps/Ave 24	F	>50	B	10.7	No	C	23.8	A	6.8	No

7.5 NEPA Impacts Summary

Many of the anticipated NEPA impacts are similar among the project alternatives as they would occur in association with the SR 99 relocation and the Merced and Fresno station sites, which are common elements to the project alternatives. Substantial impacts for freeway operations and intersections are anticipated in conjunction with the SR 99 relocation. Substantial impacts are also anticipated in the vicinity of the Merced and Fresno stations. Substantial intersection impacts have also been identified for each of the HMF sites. Applying the mitigation measures discussed in the previous sections, the project impacts would be considered moderate under NEPA. However, two intersections (#25 (undercrossing alternative alignment) and #63) in the vicinity of the Fresno Station Area would have a unavoidable substantial impact because not all proposed mitigation measures may be feasible due to physical constraints of future right-of-way widening caused by existing structures.

Moderate NEPA impacts during construction are anticipated on circulation in the vicinity of Merced and Fresno stations and HMF sites, and construction adjacent to the freeway mainline along SR 99 and construction related to the proposed SR 99 realignment between Clinton and Ashlan Avenues.

Additional impacts are anticipated in conjunction with local road closures necessary as part of each project alternative. All of the road closures are expected to result in moderate NEPA impacts since the roads proposed for closure have very low traffic volumes and necessary traffic diversions can be accomplished without causing substantial impacts on travelers.

7.6 CEQA Significance Conclusion

Table 7.6-1 identifies impacts and their level of significance before and after mitigation for the transportation resource. Table 7.6-1 reports post-mitigation conditions based on a comparison of the project to No Project conditions. It can be noted from the table that all impacts after mitigation would be less than significant under CEQA with the exception of two intersections around Fresno Station area as indicated in Table 7.6-1. Comparing the project to existing conditions, all impacts after mitigation would be less than significant under CEQA.

Table 7.6-1
Summary of Significant Transportation Resources Impacts and Mitigation Measures

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Project Impacts			
TR #1 Permanent Road Closures. UPRR/SR 99 Alternative – 22 to 25 closures BNSF Alternative – 27 to 42 closures Hybrid Alternative – 30 to 37 closures	Significant	**TR MM#1:** Access Maintenance for Property Owners.	Less Than Significant
TR #2: Fresno Area between Herndon Avenue and Shaw Avenue Impacts. All Alternatives	Significant	**TR MM#3:** Modify Signal Phasing; **TR MM#4:** Add Signal to Intersection to Improve LOS/Operation; **TR MM#5:** Restripe Intersections; **TR MM#6:** Modify Signal Timing; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections; **TR MM#10:** Grade Separate Through Movements.	Less Than Significant
TR #3: Fresno Area between Herndon Avenue and Shaw Avenue Roadway Impacts. All Alternatives	Significant	**TR MM#11:** Add Lanes to the Segment.	Less Than Significant
TR #4 SR 99 Relocation Freeway Impacts. All Alternatives	Significant	**TR MM#2:** Add Southbound Auxiliary Lane to SR 99	Less Than Significant
TR #5 SR 99 Relocation Intersection Impacts. All Alternatives	Significant	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation;	Less Than Significant

Impact	CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
		TR MM#5: Restripe Intersections; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections	
TR #6: HST Station Area Roadway Impacts. Merced – 6 segments (Option A) 8 segments (Option B) Fresno –2 segments	Significant	**TR MM#11:** Add Lanes to the Segment.	Less Than Significant
TR #7 HST Station Area Intersection Impacts. Merced – 20 intersections (Option A), 19 intersections (Option B) Fresno – 30 intersections	Significant	**TR MM#3:** Modify Signal Phasing; **TR MM#4:** Add Signal to Intersection to Improve LOS/Operation; **TR MM#5:** Restripe Intersections; **TR MM#6:** Modify Signal Timing; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections, **TR MM#9:** Convert Two-Way Stop to Four-Way Stop.	Less Than Significant and significant for Fresno station area for two intersections, #25 – H Street/Tulare Street (undercrossing alternative alignment) and #63 – H Street/Divisadero Street.
TR #8 HMF Site Intersection Impacts. Castle Commerce Center HMF – 25 intersections (Option A), 22 intersections (Option B) Harris-DeJager HMF – 1 intersection Fagundes HMF – 4 intersections Gordon-Shaw HMF – 5 intersections Kojima Development HMF – 6 intersections	Significant	**TR MM#4:** Add Signal to Intersection to Improve LOS/Operation; **TR MM#5:** Restripe Intersections; **TR MM#6:** Modify Signal Timing; **TR MM#7:** Widen Approaches to Intersections; **TR MM#8:** Add Exclusive Turn Lanes to Intersections; **TR MM#9:** Convert Two-Way Stop to Four-Way Stop.	Less Than Significant

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